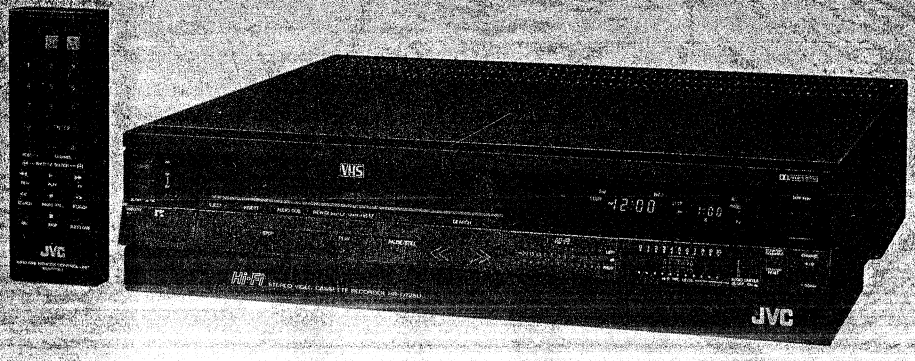
JVC

# SERVICE MANUAL

## STEREO *Hi-Fi* VIDEO CASSETTE RECORDER

## HR-D725U



## SPECIFICATIONS

Format : Hi-Fi V[illegible]

Recording system : Rotary, slant azimuth two-head helical scan system with two pairs of video heads, one pair exclusively for the SP mode and one pair for the EP mode.

Hi-Fi audio recording system : Deep-layer recording system conforming to stereo Hi-Fi VHS standard

No. of audio tracks : 2 Hi-Fi audio tracks
2 normal audio tracks

Video signal system : NTSC-type color signal

Tape width : 12.65 mm (1/2 inch)

Tape speed
(SP) : 33.35 mm/s (1-5/16 ips)
(EP) : 11.12 mm/s (7/16 ips)

Maximum recording time
(SP) : 160 min. with T-160 video cassette
(EP) : 480 min. with T-160 video cassette

Temperature
Operating : 5°C to 40°C (41°F to 104°F)
Storage : -20°C to 60°C (-4°F to 140°F)

Antenna
(VHF) : 75 ohms, unbalanced
(UHF) : 300 ohms, balanced

Channel coverage
(VHF) : Channels 2 – 13
(UHF) : Channels 14 – 83
(CATV) : 57 channels (mid, super and hyper)

VHF output signal : Channel 3 or 4 (switchable; preset to channel 3 when shipped)
75 ohms, unbalanced

Power requirement : AC 120 V∿, 60 Hz

Power consumption : 40 W (50 W with camera)

**Video**
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced

Signal-to-noise ratio : More than 45 dB (Rohde & Schwarz noise meter) with PICTURE SHARPNESS control at center position

Horizontal resolution : 240 lines with PICTURE SHARPNESS control at center position

**Audio**
Input : Mic: -67 dBs, high impedance, unbalanced
Line: -8 dBs, 50 k-ohms, unbalanced
Output level : -6 dBs, high impedance load
Output impedance : Less than 1 k-ohm, unbalanced
Signal-to-noise ratio : More than 46 dB (Dolby NR on)
Frequency range : 70 Hz to 10,000 Hz

**Hi-Fi audio**
Frequency response : 20 Hz – 20,000 Hz
Dynamic range : More than 80 dB
Wow and flutter : Less than 0.005 % WRMS
Channel separation : More than 60 dB

Timer : 14-day programmable timer (8 programs) with repeat function

Dimensions : 435 mm(W) x 105 mm(H) x 379 mm (D)
(17-3/16″ x 4-3/16″ x 14-15/16″)

Weight : 9.4 kg (20.8 lbs)

Provided accessories : Antenna cable (F-type), Cassette tape, Matching transformer, Infrared remote control RM-P72U, "AA"-size battery x 2, Audio cable

*Specifications shown are for SP mode unless otherwise specified.*
*Design and specifications subject to change without notice.*

No. 8321
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# TABLE OF CONTENTS

Section Title Page

## INSTRUCTIONS

## 1. GENERAL DESCRIPTION

1.1 INTRODUCTION 1-1
1.2 DEPTH MULTIPLEX (D-MPX) RECORDING 1-1
1.3 AZIMUTH DIFFERENCE 1-2
1.4 FREQUENCY SPECTRUM 1-2
1.5 MAINTAINING VHS FORMAT COMPATIBILITY 1-3
1.6 BLOCK DIAGRAM OUTLINE 1-3

## 2. MECHANICAL ADJUSTMENTS

2.1 GENERAL 2-1
  2.1.1 Precautions 2-1
  2.1.2 Required jigs and tools 2-1
  2.1.3 Disassembly 2-2
2.2 PERIODIC MAINTENANCE 2-4
  2.2.1 Layout of maintenance parts 2-4
  2.2.2 Service schedule for main components 2-6
2.3 MAIN ASSEMBLY REPLACEMENT 2-7
  2.3.1 Cassette housing 2-7
  2.3.2 Upper drum 2-7
  2.3.3 Full erase head 2-8
  2.3.4 Audio/control head 2-9
  2.3.5 Pinch roller 2-9
  2.3.6 Capstan motor 2-9
  2.3.7 Mode control motor 2-10
  2.3.8 Cassette motor 2-10
  2.3.9 Reel disks 2-10
  2.3.10 Clutch mechanism 2-11
  2.3.11 Brush 2-11
  2.3.12 Tension band 2-12
  2.3.13 Pick-up head 2-12
2.4 CHECKS AND ADJUSTMENTS 2-13
  2.4.1 Mechanism timing check 2-13
  2.4.2 Tension pole position check 2-13
  2.4.3 Take-up torque check 2-13
  2.4.4 Back tension check 2-13
  2.4.5 Tape transport system checks and adjustments 2-14
  2.4.6 Interchangeability checks and adjustments 2-15

## 3. ELECTRICAL ADJUSTMENTS

3.1 PREPARATION 3-1
3.2 REQUIRED TEST EQUIPMENT AND JIG 3-1
  3.2.1 JVC alignment tape contents 3-2
3.3 REGULATOR SYSTEM ADJUSTMENTS 3-3
  3.3.1 5 V DC output voltage 3-3
  3.3.2 12 V DC output voltage 3-3
3.4 MECHACON SYSTEM ADJUSTMENTS 3-3
  3.4.1 Clock frequency 3-3

Section Title Page
3.5 SERVO SYSTEM ADJUSTMENTS 3-4
  3.5.1 Drum pulse level 3-4
  3.5.2 Drum DISCR. position 3-4
  3.5.3 Capstan DISCR. position 3-5
  3.5.4 PB switching point 3-5
  3.5.5 REC switching point 3-5
  3.5.6 Tracking preset 3-6
  3.5.7 Slow tracking preset 3-6
  3.5.8 V. pulse 3-6
  3.5.9 H. discriminator (Variable Search Playback mode) 3-6
  3.5.10 Search tracking 3-7
3.6 VIDEO SYSTEM ADJUSTMENT 3-7
  3.6.1 (A) Video head resonance & Q (Quality factor) 3-7
  3.6.2 PB FM channal balance 3-8
  3.6.3 VXO (Variable Crystal Oscillator) 3-8
  3.6.4 Video E-E level 3-8
  3.6.5 Dynamic aperture control 3-9
  3.6.6 Carrier and deviation 3-9
  3.6.7 White clip and dark clip 3-10
  3.6.8 AFC 3-10
  3.6.9 REC FM level 3-10
  3.6.10 Color REC level and balance 3-10
  3.6.11 PB Y, color level 3-10
  3.6.12 NR adj. 3-11
  3.6.13 Converter balance 3-11
  3.6.14 Sharpness preset 3-11
  3.6.15 REC FM EQ 3-11
3.7 AUDIO SYSTEM ADJUSTMENTS 3-12
  3.7.1 Audio PB level 3-12
  3.7.2 Audio bias level 3-12
  3.7.3 REC level 3-12
  3.7.4 REC/PB frequency response 3-12
  3.7.5 FM audio switching point 3-13
  3.7.6 FM PB level 3-13
  3.7.7 Indicator level 3-13
  3.7.8 E-E level 3-13
  3.7.9 FM audio E-E level 3-13
  3.7.10 FM carrier frequency 3-14
  3.7.11 FM audio signal REC level 3-14
  3.7.12 FM audio REC level 3-14
3.8 TUNER/TIMER SYSTEM ADJUSTMENT 3-15
  3.8.1 Timer control clock 3-15
3.9 TUNER/IF SYSTEM ADJUSTMENTS 3-15
  3.9.1 4.5 MHz adj. 3-15
  3.9.2 Noise 3-15
  3.9.3 AFC 3-15
  3.9.4 Color level 1 3-15
  3.9.5 Color level 2 3-16
  3.9.6 Audio output level 3-16

Section Title Page

## 4. CHARTS AND DIAGRAMS

4 . 1 KEY TO ABBREVIATIONS ............................ 4 - 1
4 . 2 CIRCUIT BOARD LOCATIONS ........................ 4 - 3
  4 . 2 . 1 CONNECTIONS .................................. 4 - 4
  4 . 2 . 2 INDICATIONS ..................................... 4 - 4
  4 . 2 . 3 DIGITAL TRANSISTOR ....................... 4 - 4
  4 . 2 . 4 SIGNAL FLOW IN THE SCHEMATIC ... 4 - 4
4 . 3 OVERALL AUDIO BLOCK DIAGRAM ........... 4 - 5
4 . 4 FM AUDIO BLOCK DIAGRAM ....................... 4 - 6
4 . 5 AUDIO BLOCK DIAGRAM ............................ 4 - 7
4 . 6 TUNER/IF BLOCK DIAGRAM ....................... 4 - 8
4 . 7 VIDEO BLOCK DIAGRAM ............................ 4 - 9
  4 . 7 . 1 Luminance signal system ...................... 4 - 9
  4 . 7 . 2 Color signal system.................................. 4-10
4 . 8 SERVO BLOCK DIAGRAM ............................ 4-11
4 . 9 CAPSTAN AND DRUM TIMING CHARTS ...... 4-12
4.10 MECHANISM CONTROL BLOCK DIAGRAM ... 4-12
4.11 MECHANISM CONTROL TIMING CHARTS ... 4-13
4.12 TUNER/TIMER CTL, DISPLAY AND PROGRAM BLOCK DIAGRAM ........................................... 4-14
4.13 MICROPROCESSOR SYSTEM BLOCK DIAGRAM ....................................................... 4-15
4.14 MECHANISM CONTROL (A/S/M) SCHEMATIC DIAGRAM ...................................................... 4-16
4.15 AUDIO (A/S/M) SCHEMATIC DIAGRAM ......... 4-17
4.16 TIMING SCHEMATIC DIAGRAM AND CIRCUIT BOARD ............................................ 4-17
4.17 SERVO (A/S/M) SCHEMATIC DIAGRAM ......... 4-18
4.18 A/S/M (AUDIO/SERVO/MECHACON), A/CTL HEAD, CASSETTE HOUSING, END SENSOR, SUPPLY SENSOR, LOADING SENSOR, TAKE-UP SENSOR, LED, MODE CTL MOTOR, FULL ERASE HEAD AND POWER TRANSISTOR BOARDS .......................................................... 4-19
4.19 VIDEO SCHEMATIC DIAGRAM .................... 4-20
4.20 VIDEO CIRCUIT BOARD ............................... 4-21
4.21 FM AUDIO AND AUDIO INDICATOR SCHEMATIC DIAGRAMS ................................ 4-22
4.22 FM AUDIO AND AUDIO INDICATOR CIRCUIT BOARD ............................................ 4-23
4.23 OPERATION SCHEMATIC DIAGRAM ............ 4-24
4.24 OPERATION CIRCUIT BOARDS AND MODE SHIFT TABLE .................................................. 4-25
4.25 PREAMP SCHEMATIC DIAGRAM .................. 4-26
4.26 PREAMP CIRCUIT BOARD ............................ 4-27
4.27 REGULATOR SCHEMATIC DIAGRAM ............ 4-28
4.28 POWER TRANSFORMER AND REGULATOR CIRCUIT BOARDS ......................................... 4-29
4.29 TUNER/IF SCHEMATIC DIAGRAM ............... 4-30
4.30 TUNER/IF, AND TERMINAL CIRCUIT BOARDS .......................................................... 4-31
4.31 TUNER/TIMER CONTROL, DISPLAY AND PROGRAM SCHEMATIC DIAGRAMS .............. 4-32
4.32 TUNER/TIMER CONTROL, DISPALY AND PROGRAM CIRCUIT BOARDS ....................... 4-33
4.33 DRUM MDA, DRUM MOTOR CONNECTOR, DRUM MOTOR AND DRUM FG SCHEMATIC DIAGRAMS .................................................... 4-34
4.34 DRUM MDA, DRUM MOTOR CONN, DRUM MOTOR AND DRUM FG CIRCUIT BOARDS ... 4-35
4.35 RF SWITCH SCHEMATIC DIAGRAM AND CIRCUIT BOARD ............................................ 4-36

## 5. EXPLODED VIEWS AND PARTS LIST

5 . 1 STANDARD PART NUMBER CODING ........... 5 - 2
  5 . 1 . 1 Screw coding ........................................ 5 - 2
5 . 2 EXPLODED VIEWS AND PARTS LIST ........... 5 - 3
  5 . 2 . 1 Packing assembly ................................. 5 - 3
  5 . 2 . 2 Cabinet assembly .................................. 5 - 4
  5 . 2 . 3 Chassis assembly .................................. 5 - 6
  5 . 2 . 4 Mechanism assembly (1) ........................ 5 - 8
  5 . 2 . 5 Mechanism assembly (2) ........................ 5-10
  5 . 2 . 6 Cassette housing assembly ..................... 5-12
  5 . 2 . 7 Program assembly ................................. 5-14
  5 . 2 . 8 Remote control unit assembly ............... 5-16

## 6. ELECTRICAL PARTS LIST

6 . 1 STANDARD PART NUMBER DODING ........... 6 - 2
  6 . 1 . 1 Fixed Resistor Coding .......................... 6 - 2
  6 . 1 . 2 Fixed Capacitor Coding ........................ 6 - 3
  6 . 1 . 3 Fuse Coding ........................................... 6 - 5
6 . 2 ELECTRICAL PARTS LIST BY ASSEMBLIES... 6 - 6
  6 . 2 . 1 Power Transformer Ass'y ....................... 6 - 6
  6 . 2 . 2 Regulator Circuit Board Ass'y ................ 6 - 6
  6 . 2 . 3 Video Circuit Board Ass'y ...................... 6 - 8
  6 . 2 . 4 Audio/Servo/Mechacon (A/S/M) Circuit Board Ass'y ........................................... 6-15
  6 . 2 . 5 FM Audio (FMA) Circuit Board Ass'y ...... 6-25
  6 . 2 . 6 Operation Board Ass'y .......................... 6-29
  6 . 2 . 7 Tuner/IF Circuit Board Ass'y ................. 6-30
  6 . 2 . 8 Display Circuit Board Ass'y ................... 6-33
  6 . 2 . 9 Tuner/Timer Control Circuit Board Ass'y... 6-34
  6.2.10 Terminal Circuit Board Ass'y .................. 6-35
  6.2.11 RF Switch Circuit Board Ass'y ............... 6-35
  6.2.12 Preamplifier Circuit Board Ass'y .............. 6-36
  6.2.13 Drum Motor Drive Amplifier (MDA) Circuit Board Ass'y ................................ 3-37
  6.2.14 Program Circuit Board Ass'y .................. 6-37
  6.2.15 Audio Level Indicator ............................. 6-38
  6.2.16 Timing Circuit Board Ass'y ..................... 6-38
  6.2.17 Remote Control Board Ass'y .................. 6-38

# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## ● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   **Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

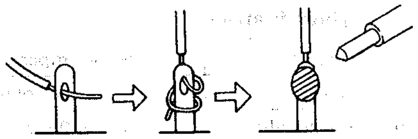


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

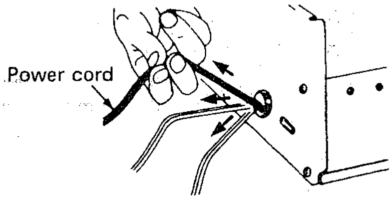


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

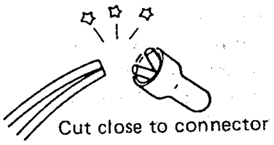


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

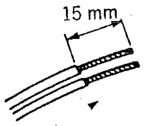


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

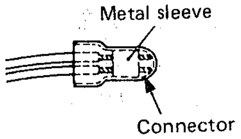


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

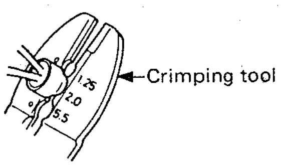


Fig. 6

(5) Check the four points noted in Fig. 7.

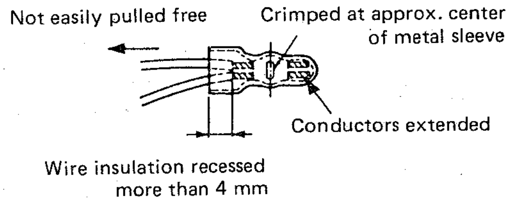

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

# ● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

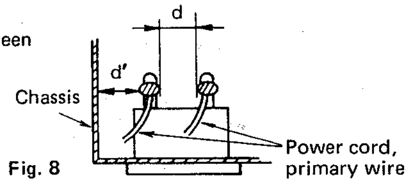


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   **Measuring Method:** (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

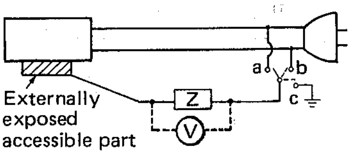


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   **Measuring Method:**
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

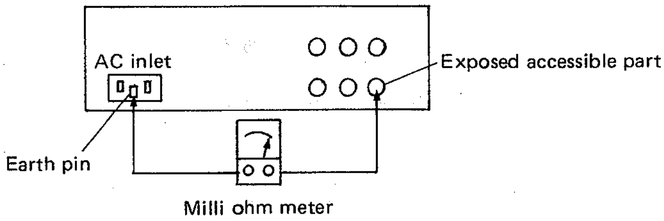


Fig. 10

**Grounding Specifications**

| Region | Grounding Impedance (Z) |
|---|---|
| USA & Canada | Z ≦ 0.1 ohm |
| Europe & Australia | Z ≦ 0.5 ohm |

| AC Line Voltage | Region | Insulation Resistance (R) | Dielectric Strength | Clearance Distance (d), (d') |
|---|---|---|---|---|
| 100 V | Japan | R ≧ 1 MΩ/500 V DC | AC 1 kV 1 minute | d, d' ≧ 3 mm |
| 100 to 240 V | | | AC 1.5 kV 1 minute | d, d' ≧ 4 mm |
| 110 to 130 V | USA & Canada | – | AC 900 V 1 minute | d, d' ≧ 3.2 mm |
| 110 to 130 V<br>200 to 240 V | Europe & Australia | R ≧ 10 MΩ /500 V DC | AC 3 kV 1 minute (Class II)<br>AC 1.5 kV 1 minute (Class I) | d ≧ 4 mm<br>d' ≧ 8 mm (Power cord)<br>d' ≧ 6 mm (Primary wire) |

Table 1 Specifications for each region

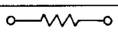
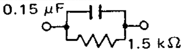
| AC Line Voltage | Region | Load Z | Leakage Current (i) | a, b, c |
|---|---|---|---|---|
| 100 V | Japan |  1 kΩ | i ≦ 1 mA rms | Exposed accessible parts |
| 110 to 130 V | USA & Canada |  | i ≦ 0.5 mA rms | Exposed accessible parts |
| 110 to 130 V<br>220 to 240 V | Europe & Australia | 2 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Antenna earth terminals |
| | | 50 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Other terminals |

Table 2 Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

# HR-D725U

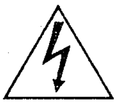
## INSTRUCTIONS

For reference, the text of the instruction booklet of this model is reproduced in the following pages.
Numbering of the pages also corresponds with that of the booklet.

**CAUTION**

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

## WARNING:
## TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

**This video cassette recorder should be used with AC 120 V∿, 60 Hz only.**
**CAUTION:**
**To prevent electric shocks and fire hazards, do NOT use any other power source.**

### CAUTION
When you are not using the HR-D725U for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.

### CAUTION
TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

**Note to CATV system installer:**
This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

**VHS**

Only cassettes marked "VHS" can be used with this video cassette recorder.

Thank you for purchasing the JVC HR-D725U Hi-Fi VHS Color Video Cassette Recorder. This unit is based on the new Hi-Fi VHS system developed to provide true hi-fi stereo accompaniment to video entertainment. A tremendous array of video features is also incorporated in the HR-D725U. Learn about all the available features listed in full on the following page and take advantage of them for your total audio-visual enjoyment.

Before using this video recorder, read this instruction booklet carefully so that you will obtain best results from your HR-D725U.

**Warning to Purchasers of USA:**
One Federal Court has held that recording copyrighted TV programs is infringement. Such programs should not be recorded.

**NOTE:** The rating plate and the safety caution are on the rear of the unit.

## CONTENTS

Features .......... 2
Precautions .......... 3
Controls, indicators and connectors .......... 4
Information on the HR-D725U's built-in tuner .......... 10
Information on the HR-D725U's audio system .......... 11

Connections

  Connection to a TV receiver .......... 13
  Connection to a stereo system .......... 14
  Connection to cable or pay television .......... 15
Video channel setting .......... 17
Clock setting .......... 18
Loading and unloading a cassette .......... 19
Playing back a video cassette .......... 20
Tape counter/Remaining time counter/Counter and cue search/Tracking controls .......... 21
Recording a TV program while watching it .......... 22
Recording a TV program while watching another .......... 23
Recording FM simulcast TV programs .......... 24
Automatic timer recording .......... 25
Important information on timer recording .......... 26
Instant recording .......... 28
Recording with a video camera .......... 29
Audio dubbing .......... 30
Insert editing .......... 31
Adjust your TV receiver when .... .......... 33
Head cleaning .......... 33
In case of difficulty .......... 34
Specifications .......... 35

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# FEATURES

**Stereo video recorder conforming to the Hi-Fi VHS format, assuring high-quality sound recording and playback with independent rotary audio heads exclusively for hi-fi audio recording and playback.**

SP (Standard Play) and EP (Extended Play) recording and playback, with playback of LP (Long Play) tapes also possible.

Variable-speed playback from 1/40 to 7 times normal in both directions in SP and EP modes.

Auto-scan tuning with channel up/down buttons.

Instant recording for 30 minutes in length or multiples of 30 minutes up to 4 hours; fine-adjustable up to 4 hours 59 minutes using timer setting buttons.

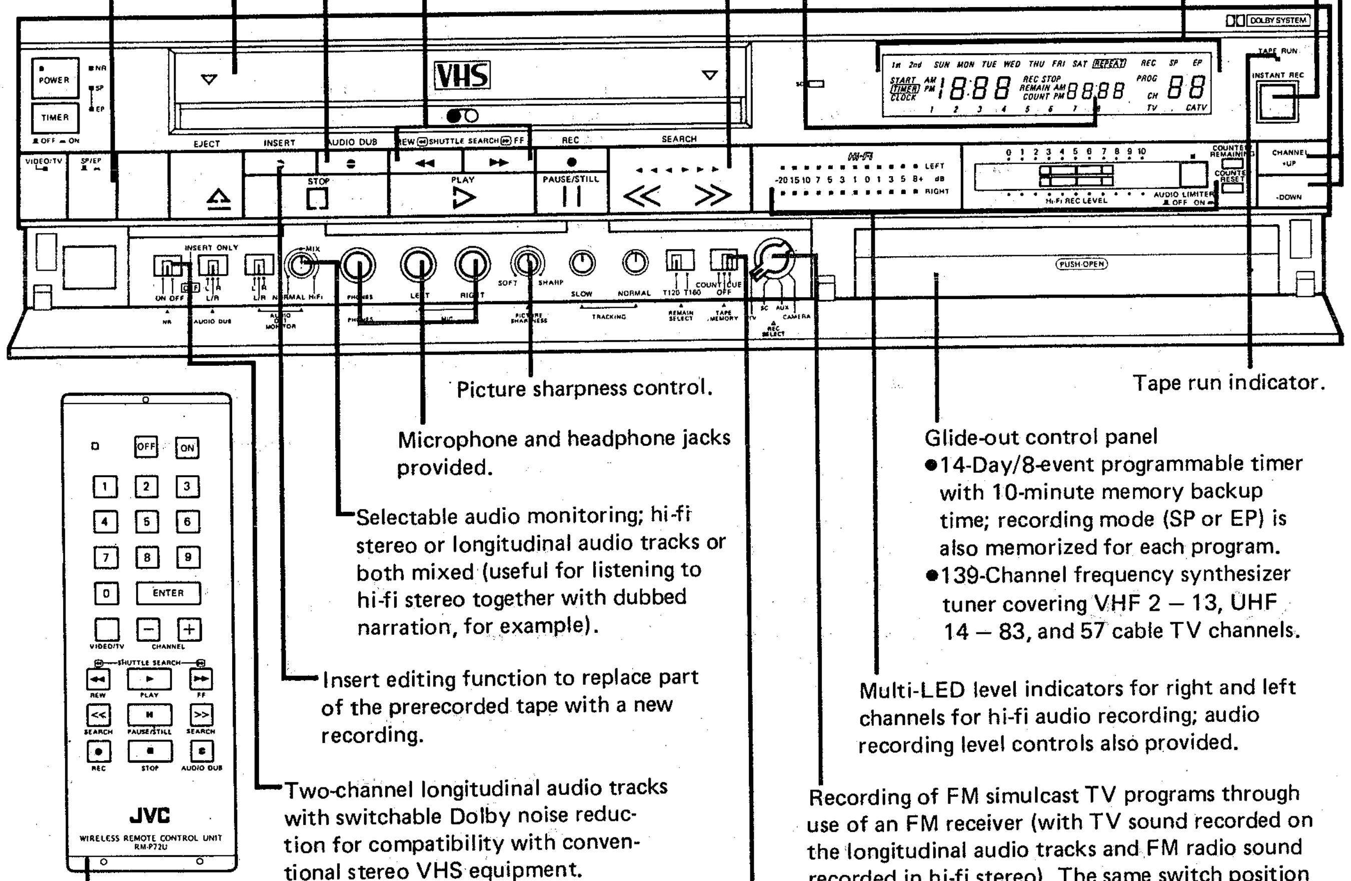
Double-flap, motorized front cassette loading system.

Flexible audio dubbing onto longitudinal audio tracks; right channel only, left channel only, or both channels.

Comprehensive fluorescent display

Shuttle Search at 7 times normal speed in either direction in both SP and EP modes.

Tape counter switchable to tape remaining length indicator.



Picture sharpness control.

Tape run indicator.

Microphone and headphone jacks provided.

Glide-out control panel
- 14-Day/8-event programmable timer with 10-minute memory backup time; recording mode (SP or EP) is also memorized for each program.
- 139-Channel frequency synthesizer tuner covering VHF 2 – 13, UHF 14 – 83, and 57 cable TV channels.

Selectable audio monitoring; hi-fi stereo or longitudinal audio tracks or both mixed (useful for listening to hi-fi stereo together with dubbed narration, for example).

Insert editing function to replace part of the prerecorded tape with a new recording.

Multi-LED level indicators for right and left channels for hi-fi audio recording; audio recording level controls also provided.

Two-channel longitudinal audio tracks with switchable Dolby noise reduction for compatibility with conventional stereo VHS equipment.

Recording of FM simulcast TV programs through use of an FM receiver (with TV sound recorded on the longitudinal audio tracks and FM radio sound recorded in hi-fi stereo). The same switch position allows FM stereo broadcasts to be recorded independently of TV programs.

Full-function infrared remote control unit; with 10 random-access channel select keys.

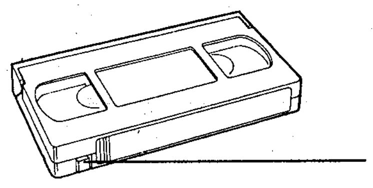
Counter search and cue search mechanism.

- Audio-only recording of up to 8 continuous hours – never possible with audio cassette tapes – on both hi-fi and longitudinal audio tracks.
- Double-gap integrated 4-head system for video recording – ensures high picture quality in both SP and EP modes and enables noise-free field-still and slow-motion playback.
- Microprocessor-controlled stable and noise-free still and slow-motion playback by single-field scanning method.
- Automatic backspace recording for assemble edits.
- Automatic rewind at the end of tape.
- Dimmer control provided on the glide-out control panel.
- Dynamic Aperture Control circuit to give recordings greater clarity.
- Camera connector provided on the rear panel for direct camera connection.
- Slim-line, low-profile design – only 105 mm (4-3/16") in height.

# PRECAUTIONS

**Handling and storage**
- Avoid using the recorder under the following conditions:
  - – extremely hot, cold or humid places,
  - – dusty places,
  - – near appliances generating strong magnetic fields,
  - – places subject to vibrations, and
  - – poorly ventilated places.
- Be careful of moisture condensation.
  Avoid using the recorder immediately after moving from a cold place to a warm place or soon after heating a room which was cold. The water vapor in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill and cause trouble on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- In case of transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

**Video cassettes**
- This recorder employs VHS-type cassettes only.
  T-160 for 160/480 minutes, T-120 for 120/360 minutes, T-90 for 90/270 minutes, T-60 for 60/180 minutes and T-30 for 30/90 minutes of recording.
- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

**CAUTION:**
Do not bring cassettes near the magnets used for closing the sub-control panel cover.

**Moisture condensation**
- If you pour a cold liquid into a glass, water vapor in the air will condense on the surface of the glass. This is called moisture condensation.
- Moisture condensation on the head drum, one of the most crucial parts of the video recorder, will cause damage to the tape.
- Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, after heating a cold room or under extremely humid conditions.
- This recorder is equipped with a moisture condensation prevention circuit which automatically heats the head drum according to the ambient temperature. This circuit operates only when the unit is plugged into an AC outlet, and the front panel POWER button is in the OFF position.
- The moisture condensation prevention circuit consumes only a slight amount of power. However, if for some reason you are not using the recorder for a long period of time, it is advisable to remove the power cord from the AC outlet.
- Since the moisture condensation prevention circuit cannot evaporate existing moisture condensation immediately after the power cord has been plugged into the AC outlet, you must allow for about 2 hours if the recorder is to be used in such areas as would occasion moisture condensation.

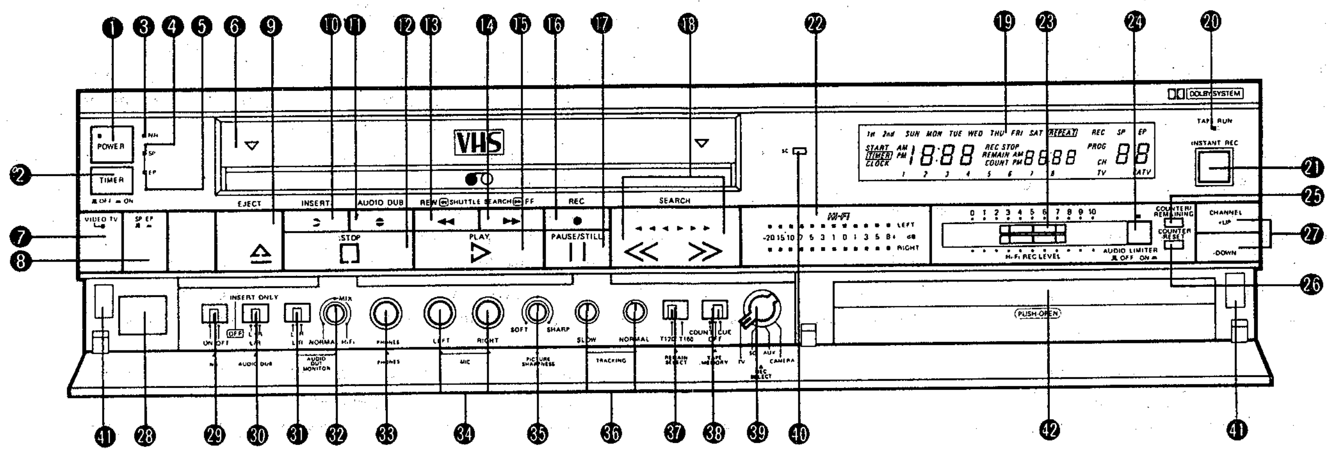
**Operation**
- The cassette can be loaded only when the recorder is powered (with the front panel POWER button in the ON position). Do not force the cassette into the slot with the power off.
- If you unplug the power cord from the AC wall outlet with the front panel POWER button in the ON position, the recorder section cannot be powered even though the power cord is plugged in once again. In such a case, press the POWER button to OFF once and then press it to ON.
- If you wish to operate the recorder locally after you have switched the power off via the remote control unit, first press the POWER button to OFF and then press it to ON again.
- As long as the POWER button is in the ON position, switching the recorder on or off can be performed via the remote control unit.

**Remote control unit**
- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

## CONTROLS, INDICATORS AND CONNECTORS

Keep this page opened so that you can refer to it at any time when you are reading this booklet.

### Front panel



**❶ POWER button**
Press to apply power to the recorder. The indicator will light.

**❷ TIMER button**
Press to ON (▬) after you have preset the timer for unattended recording.

**❸ NR indicator**
Lights when the NR switch ㉙ is set to ON. (Unrelated to hi-fi audio.)

**❹ SP mode indicator**
Lights when the SP/EP button ❽ is in the SP position (▀) during recording. In playback, it automatically lights when an SP recording is played back regardless of the switch setting.

**❺ EP mode indicator**
Lights when the SP/EP button ❽ is in the EP position (▬) during recording. In playback, it automatically lights when an EP recording is being played back regardless of the switch setting.

**❻ Cassette loading slot**
Insert a VHS video cassette. The door will close and the indicator showing that a cassette is inside will appear.

**❼ VIDEO/TV button**
Selects between TV and VIDEO modes.
TV mode (the indicator is off): for TV viewing and for watching a TV program while recording another.
VIDEO mode (the indicator lights): for recording a TV program while watching it and for playing back recorded tapes. When the POWER button is pressed to ON, the TV mode is engaged. If you want to change the mode, press the VIDEO/TV button.

**❽ SP/EP recording mode select button**
Leave the button in its 'out' position (▀) when you wish recordings to be made in the SP (Standard Play) mode. When you wish to record longer TV shows or for unattended and prolonged recording of a number of TV shows with a combined time of up to 8 hours, press this button to EP (Extended Play).

**❾ Cassette EJECT button**

**❿ INSERT button**
Press this button for insert editing. See pages 31 and 32.

**⓫ AUDIO DUB button**
Press this button together with the PLAY button ⓯ for audio dubbing. Audio dubbing is possible only on the longitudinal audio tracks. (Hi-fi soundtrack cannot be altered.) For more information see page 30.

**⓬ STOP button**
To stop the tape.

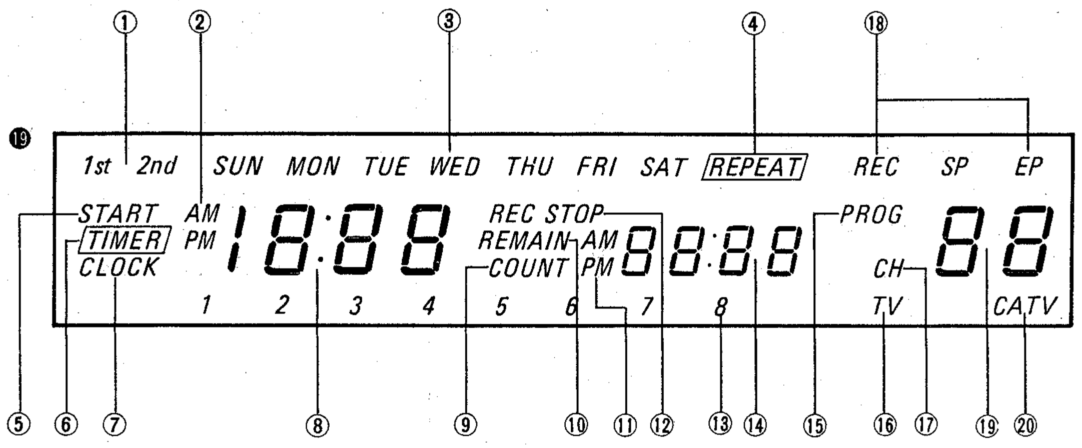
**⓭ REW/SHUTTLE SEARCH button**
To rewind the tape, press this button while in the Stop mode. To view the speeded-up picture in the reverse direction for program search, hold this button pressed while in the Play mode.

**⓮ FF/SHUTTLE SEARCH button**
To fast forward the tape, press this button while in the Stop mode. To view the speeded-up picture in the forward direction for program search, hold this button pressed while in the Play mode.

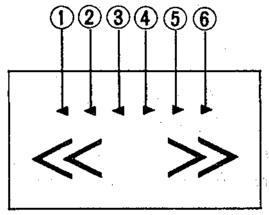
**⓯ PLAY button**
Press to playback the tape or cancel the Pause/Still mode and variable-speed Search playback mode. Also press this button together with the REC button ⓰ for recording or with AUDIO DUB button ⓫ for audio dubbing.

**⓰ Record button (REC)**
Press together with the PLAY button ⓯ for video and audio recording.

**⓱ PAUSE/STILL button**
Press to stop the tape temporarily to avoid recording of unwanted material or to view a still picture. The still picture can be advanced in a frame-by-frame manner each time this button is pressed.



**⓲ Variable-speed SEARCH button**
Press either the "≪" or "≫" side of this button to search for a specific segment of the program at variable speeds; "≪" in the reverse direction and "≫" in the forward direction. Each time this button is pressed while in the Play mode, the speed changes in the sequence of 1/40, 1/20, 1/10, 1/5 (these speeds are useful for slow-motion playback), x1, x3, x5 and x7 (these speeds are useful for quick viewing or searching for a specific section). No audio is available in this variable-speed Search mode. When the button is pressed continuously, the speed changes automatically from 1/40 to x7. To cancel the variable-speed Search mode, press the PLAY button ⓯ .



LEDs ① through ③ light when the tape is running in the reverse direction; ① at speeds of x5 and x7, ② at speeds of x1 and x3, and ③ at slow-motion speeds (from 1/40 to 1/5). LEDs ④ through ⑥ light when the tape is running in the forward direction; ④ at slow-motion speeds (from 1/40 to 1/5), ⑤ at speeds of x1 and x3, and ⑥ at speeds of x5 and x7.

**⓳ Fluorescent display section**

**① Week indicator**
"1st" or "2nd" illuminates to show the week for making preset recordings. "1st" stands for the period within one week and "2nd" within the second week from setting.

**② AM/PM indicator**

**③ Day indicator**
Illuminates both for continuous day indication and for day presetting for future recordings.

**④ REPEAT indicator**
Illuminates when the REPEAT button is pressed to show that the entered data for timer recording will be retained for serial recordings.

**⑤ START indicator**
Flashes for switch-on time setting.

**⑥ TIMER indicator**
Illuminates when the TIMER button is pressed to ON (▬) to show that the recorder has been properly preset for timer recording.

**⑦ CLOCK indicator**
Always illuminates except in the Program Set mode.

**⑧ Clock/Start time display**

**⑨ COUNT indicator**
Illuminates to show that the digits in the display to the right are the counter reading.

**⑩ REMAIN indicator**
Illuminates to show that the digits in the display to the right are the reading of tape remaining time.

**⑪ AM/PM indicator**

**⑫ REC STOP indicator**
Flashes or illuminates in the Instant Recording mode. Only STOP flashes for switch-off time setting.

**⑬ Program number indicator**
Numerals 1 through 8 illuminate successively each time the PROGRAM button is pressed to show which program is ready for entry.

**⑭ Stop time/Tape remaining time/Counter display**

**⑮ PROG indicator**
Flashes to show that the channel is ready to be entered for timer recording.

**⑯ TV indicator**
Lights when the BAND button on the glide-out control panel is in the TV position (▀).

**⑰ CH indicator**
Illuminates to show that the displayed channel is currently being received by the built-in tuner.

**⑱ REC SP and EP indicators**
When the SP mode is selected with the SP/EP button on the glide-out control panel, REC SP lights; when EP is selected, REC EP lights.

**⑲ Channel display**
Depending on the selected mode, this displays either the currently tuned channel or the channel to be recorded from later, using the built-in timer.
When the TV position is selected with the BAND button, channels 2 through 83 are displayed successively; when the CATV position is selected, channels 2 through 64 and 69 through 74 are displayed successively.

**⑳ CATV indicator**
Lights when the BAND button on the glide-out control panel is in the CATV position (▬).

**⓴ TAPE RUN indicator**
Blinks to show the condition of tape running.

**㉑ INSTANT REC button**
Use this button to start recording instantly and stop automatically after a predetermined time. (See page 28.)

**㉒ Hi-Fi audio level indicators**
These indicators, one for left channel and one for right channel, show the recording level of hi-fi audio signals.

During playback, these show the playback level of hi-fi audio signals only when the AUDIO LIMITER button ㉔ is OFF ( ■ ).

**㉓ Hi-Fi audio recording level controls (Hi-Fi REC LEVEL)**
The recording level of hi-fi audio signals can be manually adjusted when the AUDIO LIMITER button ㉔ is in the OFF position. For adjustment, slide these controls referring to the Hi-Fi level indicators. When LEDs up to 0 dB light with the loudest signal being applied, the recording level is optimum.

**㉔ AUDIO LIMITER button**
During recording,

| | |
|---|---|
| with the button ON:<br>(LED lights) | hi-fi audio recording level is automatically adjusted to prevent overlevel recordings. (The level indicators do not light.) |
| with the button OFF:<br>(LED off) | hi-fi audio recording level can be manually adjusted with the slide controls. |

During playback,

| | |
|---|---|
| with the button ON: | Hi-Fi level indicators do not function. |
| with the button OFF: | hi-fi audio playback level is shown by the level indicators. |

- Playback level has no relation to the Hi-Fi REC LEVEL controls.
- The recording level of normal audio signals is always adjusted automatically regardless of the setting of the AUDIO LIMITER button.

**㉕ COUNTER/REMAINING button**
Press to switch the middle 4-digit display from tape counter to tape remaining time display, or vice versa. (See page 21.)

**㉖ COUNTER RESET button**
Press to reset the tape counter reading to "0000".

**㉗ CHANNEL buttons**
Press to tune to broadcast stations; the "+UP" button for scanning in the direction of increasing channel numbers and the "–DOWN" button in the direction of decreasing channel numbers. The selected channel will appear in the channel display.

**㉘ Infrared beam receiving window**

**㉙ Noise reduction switch (NR) (for normal audio)**
This switch is effective only for the longitudinal audio tracks (there is no need to apply noise reduction to hi-fi audio). Set to ON to activate the built-in Dolby* NR circuit to minimise tape hiss. Recordings made with this switch set to ON should be played back with the switch set to ON.

**㉚ AUDIO DUB channel select switch (for normal audio)**
Selects the normal audio channel(s) to be dubbed.

L/R: both the left and right channel sounds are replaced with new recordings.
L: the left channel sound is replaced with a new recording while the right channel sound remains as original.
R: the right channel sound is replaced with a new recording while the left channel sound remains as original.

This switch also selects the audio channel for insert editing, although the L position does not allow new material to be inserted onto the normal audio channels.

**㉛ AUDIO OUT MONITOR switch**
Selects the audio channel(s) to be listened to. This switch is effective for all audio outputs except from the HI-FI AUDIO OUT connectors.

L: to listen to the sound on the left channel track.
L/R: to listen to the sound from stereo tapes. (The audio output from the RF OUT terminal is monaural. Therefore, if only the RF OUT connection is made, the mixed sound of both channels is heard when this switch is set to L/R.)
R: to listen to the sound on the right channel track.

For more information about audio tracks, refer to pages 11 and 12.

**㉜ AUDIO OUT MONITOR control (Audio mixing volume control)**
Adjusts the relative level of hi-fi and normal audio of the audio output from the MIXED AUDIO OUT connectors, PHONES jack or the RF OUT connector. Turn it fully clockwise toward Hi-Fi to listen to the hi-fi audio tracks only; fully counterclockwise toward NORMAL to listen to the longitudinal audio tracks only. In between the two, mixed sound of them can be listened to at corresponding levels. Using this function, it is possible to enjoy hi-fi audio while at the same time listening to a narration dubbed onto the longitudinal audio tracks.

**㉝ Headphone jack (PHONES)**
Connect a set of headphones for monitoring or private listening. The headphone output level is switchable with a switch on the bottom of the unit. (See page 8.)

**㉞ MIC jacks (LEFT, RIGHT)**
Connect microphones for stereo recordings.

- When a microphone is plugged into the LEFT jack only, the same sound is recorded on both channels.
- When a microphone is plugged into the RIGHT jack only, the sound is recorded on the right channel.
- With a microphone connected to each jack, stereo recordings are possible.

**㉟ PICTURE SHARPNESS control**
Turn this knob clockwise to make the picture sharper. Turn counterclockwise to give the picture a softer tone. Effective only for playback pictures. (No effect for recording.)

**㊱ TRACKING controls**
Use these controls to eliminate noise bars, if observed, during playback.
SLOW: during slow-motion playback.
NORMAL: during normal-speed playback.
If noise or breaks are heard in the hi-fi audio soundtrack during normal-speed playback, attempt to correct it with the NORMAL TRACKING control.

**㊲ REMAIN SELECT switch (T160/T120)**
In order for the tape remaining time counter to give the correct information, it is necessary to set this switch correctly.
T160: set to this position when using a T-160 cassette.
T120: set to this position when using a cassette other than T-160.

**㊳ TAPE MEMORY switch**
Two search modes are available; COUNT search and CUE search.
When the switch is set to COUNT, the tape stops automatically at the counter reading of nearly "0000" during fast forward and rewind. When the switch is set to CUE, the tape stops automatically at a point where a new recording was made, during either rewind or fast forward by sensing the cue signal. Refer to page 21. Normally set this switch to OFF.

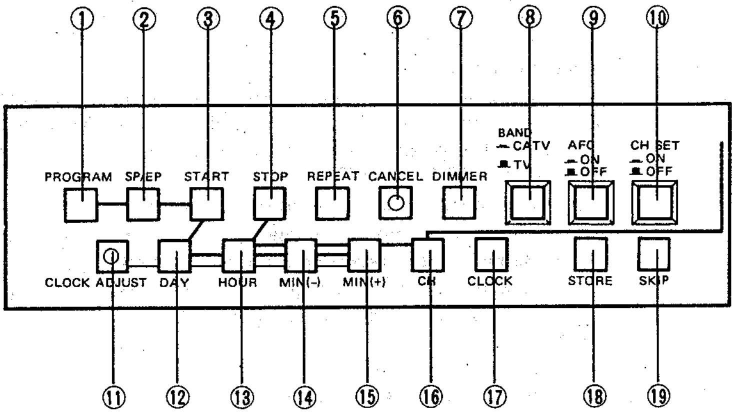
**㊴ REC SELECT switch**
For selecting the recording input signal.

| | |
|---|---|
| TV: | To record signals coming from the built-in tuner. |
| SC: | To record the video signal and normal audio signal from the built-in tuner and the hi-fi audio signal from the rear panel AUDIO LINE IN connectors. When recording FM simulcast TV programs, use this position. |
| AUX: | To record signals coming from the units connected to the rear panel VIDEO IN and AUDIO LINE IN connectors. |
| CAMERA: | To record signals coming from a camera connected to the rear panel CAMERA connector. |

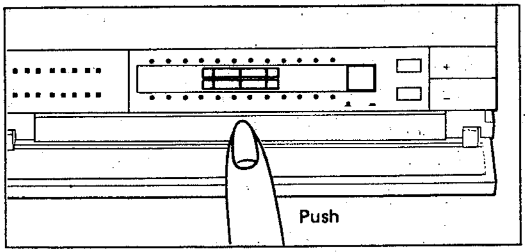
**㊵ SC indicator**
Lights when the REC SELECT switch ㊴ is set to SC.

㊶ **Magnets**
Exercise care not to bring video cassettes near these magnets.

㊷ **Clock/timer setting and tuner control section (PUSH-OPEN)**
This section glides forward when slight pressure is applied to the portion labelled PUSH-OPEN. To retract this section, push back with finger.



1



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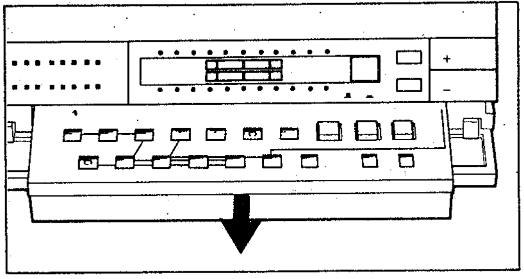


① **PROGRAM button**
Press this button when you want to preset the timer for unattended recording. The entire display will change to the Program Set mode, with numeral 1 illuminated at the bottom of the display. This shows that program memory No. 1 is ready to accept entries. To change the program number, press this button until the number of the program memory you want to use illuminates.

② **SP/EP button**
The recording mode can be programmed independently for each preset program for timer recording.
SP: 2 hours 40 minutes with a T-160 cassette.
EP: 8 hours with a T-160 cassette.

③ **START button**
Press for setting the day and switch-on time for automatic timer recording.

④ **STOP button**
Press for setting the switch-off time for automatic timer recording.

⑤ **REPEAT button**
After you have entered all data for each program for unattended recording, if you wish the entered data to be kept for serial recording, press this button.

⑥ **CANCEL button**
Press this button to cancel or "clear" the preset data.

⑦ **DIMMER button**
The brightness of the display can be subdued by pressing this button.

⑧ **BAND button (CATV/TV)**
If a regular VHF antenna is connected to the rear panel ANT IN terminal (with a UHF antenna connected to the UHF IN terminals), leave this button in the TV position ( ▀ ). If a cable line is connected to the ANT IN terminal, press this button to CATV ( — ) to receive cable TV channels.

⑨ **AFC button**
Press to ON to activate the built-in Automatic Frequency Control circuit for fine picture tuning.
It is recommended that this button be pressed to ON especially when receiving CATV channels.

⑩ **CH SET button**
Press this button to ON when you wish to skip unused channels (of the 139 pretuned frequencies) or to restore the once-skipped channels. Normally leave the button in its 'out' position.

⑪ **CLOCK ADJUST button**
Hold this button pressed for clock setting.

⑫ **DAY button**
Press until a desired day indication appears on the display for clock and timer settings.

⑬ **HOUR button**
Press to obtain a desired hour indication for clock and timer settings. Can also be used for fine adjustment of time for instant recording.

⑭ **MIN (-) button**
Press to decrease the minute indication for clock and timer settings. Can also be used for fine adjustment of time for instant recording.

⑮ **MIN (+) button**
Press to increase the minute indication for clock and timer settings. Can also be used for fine adjustment of time for instant recording.

⑯ **Channel button (CH)**
Press this button and then use the CHANNEL buttons ㉗ to obtain a desired channel indication on the display in the Program Set mode.

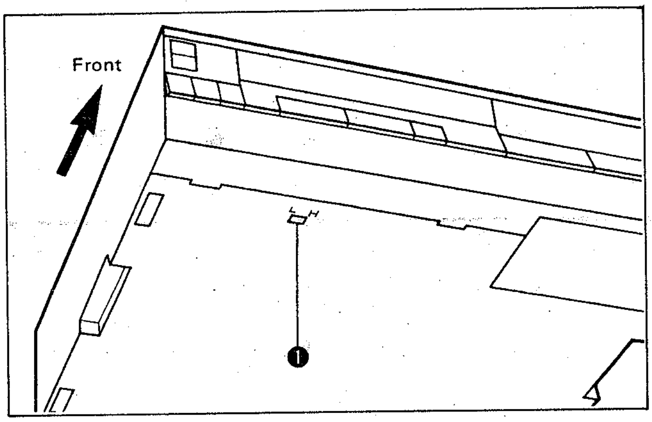
⑰ **CLOCK button**
Press this button to change the display from the Program Set mode to the Clock mode.

⑱ **STORE button**
Press to restore the channels that were previously selected to be skipped. (See page 10).

⑲ **SKIP button**
Press to skip unnecessary channels. (See page 10.)

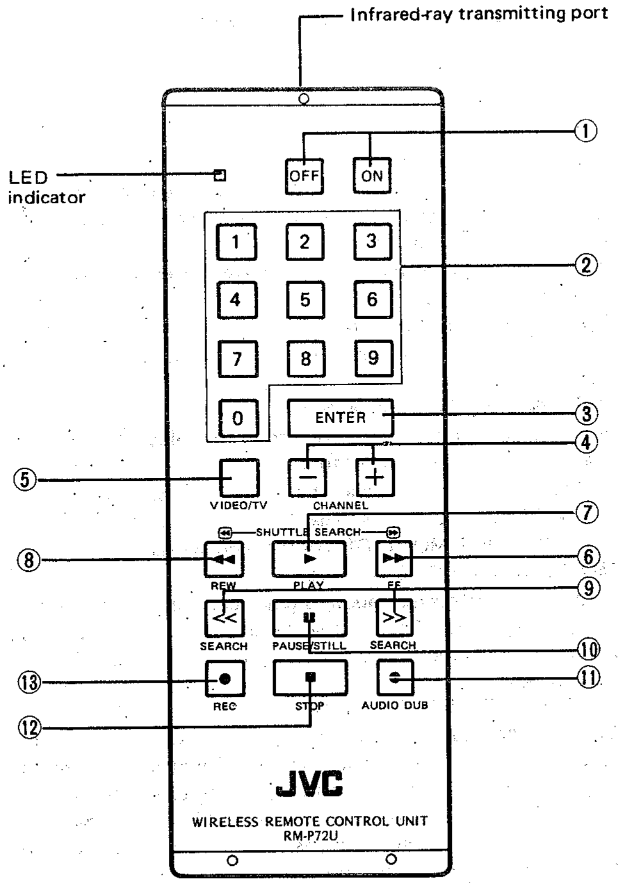
* Dolby noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

## Bottom panel



**❶ Headphone output level select switch**
H: High output.
L: Low output.
Before shipment, this switch has been set to H. If the headphone volume is too loud, reset it to L.

## Infrared remote control unit


Infrared-ray transmitting port
LED indicator
OFF
ON
1
2
3
4
5
6
7
8
9
0
ENTER
VIDEO/TV
CHANNEL
SHUTTLE SEARCH
REW
PLAY
FF
SEARCH
PAUSE/STILL
SEARCH
REC
STOP
AUDIO DUB
JVC
WIRELESS REMOTE CONTROL UNIT
RM-P72U
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬

The infrared remote control unit gives you full operation control from your viewing position. The maximum operating distance is about 8 m (26 ft).

① **Power ON/OFF buttons**
To switch power on or off for the recorder. (The POWER button of the recorder should be ON.)

② **Random-access channel select keys**
Directly specify the number of the channel you want to call up by pressing appropriate buttons. To specify a single-digit channel, channel 5 for example, it makes no difference whether only "5" or "05" is keyed in. Only "5" is displayed in either case.

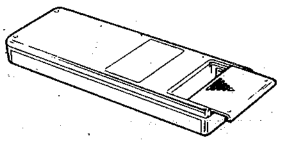
If a non-existing channel (TV 99 or CATV 83, for example) is specified, the previous channel setting is restored in about 3 seconds (or immediately by pressing the ENTER button).

③ **ENTER button**
Press this button after you have specified the channel number with the random-access keys ②, and the selected channel will be received immediately. If this button is not pressed, the selected channel will be received automatically in about 3 seconds.

④ **CHANNEL select buttons (+/-)**
Use these buttons for sequential channel selection.

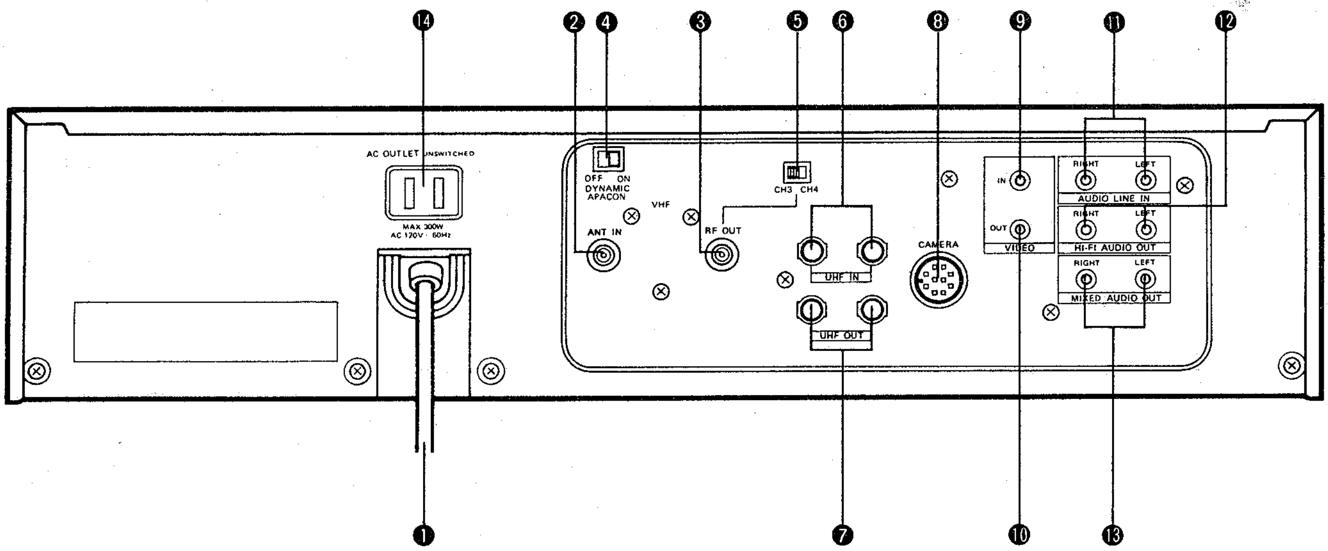
⑤ **VIDEO/TV button**
⑥ **FF/SHUTTLE SEARCH button**
⑦ **PLAY button**
⑧ **REW/SHUTTLE SEARCH button**
⑨ **Variable-speed SEARCH buttons**
⑩ **PAUSE/STILL button**
⑪ **AUDIO DUB button**
⑫ **STOP button**
⑬ **Record button (REC)**

**Installing the batteries**
1. Slide the battery compartment cover on the rear of the unit in the direction of the arrow (▶).



2. Insert 2 "AA"-size batteries (provided) in the correct directions into the battery compartment.
3. Replace the cover.

## Rear panel



❶ **AC power cord**
Connect to an AC 120 V∿, 60 Hz household outlet.

❷ **ANT IN terminal**
Connect the 75-ohm VHF antenna coaxial cable to this terminal. For cable TV connection, see pages 15 to 17.

❸ **RF OUT connector**
Connect to the VHF antenna terminal of a TV receiver through the VHF antenna cable provided.

❹ **Dynamic aperture control switch (DYNAMIC APACON)**
This switch has been preset to ON before shipment.
Normally leave this switch in its ON position. This will provide recordings with greater clarity. However, it is recommended that the switch be set to OFF if the off-air signal strength is weak or when dubbing from a tape with an inferior signal-to-noise ratio. For evaluation, make a test recording and play it back. If the playback picture looks coarse (grainy), set the switch to OFF.

❺ **RF output channel select switch**
Initially set to CH3. If channel 3 is occupied by a broadcast, reset this switch to CH4.

❻ **UHF IN antenna terminals**
Connect the feeder from the UHF antenna to these terminals.

❼ **UHF OUT antenna terminals**
Connect to the UHF antenna terminals of a TV receiver through a UHF antenna cable.

❽ **CAMERA connector**
Connect a JVC video camera (with a power consumption of less than 8 watts) directly to this connector using a 10-pin camera cable.
**Caution:** Other brands of cameras and some JVC cameras may not be electronically compatible, even though the same type of connector is used. Consult your dealer.

❾ **VIDEO IN connector**
Connect the video output of other video equipment such as another video tape recorder for recording video signals.

❿ **VIDEO OUT connector**
Video signals being recorded or played back are available from this connector.

⓫ **AUDIO LINE IN connectors**
Connect an audio tape recorder or other audio sources for recording sound.

⓬ **HI-FI AUDIO OUT connectors**
Hi-fi audio signals being recorded or played back are available from these connectors.

- These connectors deliver the audio signals directly from the hi-fi audio tracks regardless of the settings of the AUDIO OUT MONITOR control and switch.

⓭ **MIXED AUDIO OUT connectors**
Both hi-fi and normal audio signals can be obtained from these connectors. The relative level of the signals can be adjusted with the front panel AUDIO OUT MONITOR control ㉜ .

⓮ **AC OUTLET (UNSWITCHED)**
Connect the power cord of other audio or video equipment (such as a TV) requiring less than 300 watts of power. If this rating should be exceeded, the built-in fuse will be blown. This outlet supplies power (AC 120 V∿) regardless of the POWER switch setting as long as the power cord of the HR-D725U is plugged in.

# INFORMATION ON THE HR-D725U'S BUILT-IN TUNER

The HR-D725U incorporates an advanced frequency synthesizer tuner which is pretuned to VHF channels 2 through 13, UHF channels 14 through 83 and 57 cable TV channels (including mid, super and hyper bands). There is no need to preset the tuner; it automatically receives the broadcast corresponding to the channel number displayed. To receive programs through VHF and UHF antennas, leave the BAND button, located in the glide-out control section, in the TV ( ▄ ) position. To receive programs from the cable TV line, press the button to CATV ( ▬ ). A "last-channel memory" system is employed, so that when you switch back to the TV mode from CATV, the last TV channel selected prior to entering the CATV mode is tuned in automatically. The same applies when you switch back to CATV from TV.

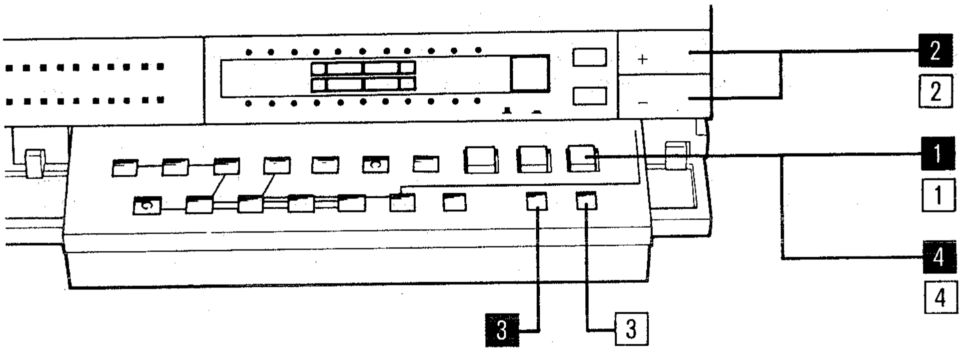
**Note:** If the picture is not clear, perform fine tuning on your television.

**Stored and skipped channels**

A total of 139 channels are receivable. However, to prevent the tuner from scanning all the frequencies to reach your desired station, some channels are skipped. It is possible to restore the skipped channels whenever necessary. Also, it is possible to skip more channels if there are no broadcasts on those channels in your area.

Prior to shipment, the following channels are stored for instant tuning.

| BAND switch setting | Channels |
|---|---|
| CATV | VHF 2 through 13<br>CATV 14, 18, 23, 29, 36, 48, 49 |
| TV | VHF 2 through 13<br>UHF 14, 15, 17, 18, 20, 22, 23, 25, 27, 29, 30, 32, 35, 36, 40, 44, 48, 49 |



**To store the skipped channels**

1. Press the CH SET button to ON ( ▬ ).
2. Call up the channel number that you wish to restore by pressing either CHANNEL button.
   - In the Channel Set mode, all channel numbers including skipped ones are successively displayed.
3. Press the STORE button.
4. Press the CH SET button to OFF ( ▄ ) to disengage the Channel Set mode.
   - The station on the corresponding channel will be called up at any time with the CHANNEL buttons.

**To skip the stored channels**

1. Press the CH SET button to ON ( ▬ ).
2. Call up the channel number that you wish to skip by pressing either CHANNEL button.
3. Press the SKIP button.
   - The letters "PO" will appear momentarily in place of the channel numbers, indicating that the corresponding channel has been skipped.
4. Press the CH SET button to OFF ( ▄ ) to disengage the Channel Set mode.
   - The skipped channel will not appear on the channel display when the CHANNEL buttons are pressed.

## CORRESPONDENCE BETWEEN CABLE TV CHANNELS AND THIS RECORDER'S CHANNEL INDICATIONS

Cable channels have been programmed to special numbers at the factory. Refer to the following table.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable channel | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | A | B | C |
| Channel indication | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Cable channel | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
| Channel indication | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Cable channel | S | T | U | V | W | W+1<br>(AA) | W+2<br>(BB) | W+3<br>(CC) | W+4<br>(DD) | W+5<br>(EE) | W+6<br>(FF) | W+7<br>(GG) | W+8<br>(HH) | W+9<br>(II) | W+10<br>(JJ) |
| Channel indication | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 |
| Cable channel | W+11<br>(KK) | W+12<br>(LL) | W+13<br>(MM) | W+14<br>(NN) | W+15<br>(OO) | W+16<br>(PP) | W+17<br>(QQ) | W+18<br>(RR) | W+19<br>(SS) | W+20<br>(TT) | W+21<br>(UU) | W+22<br>(VV) | W+23<br>(WW) | W+24<br>(XX) | W+25<br>(YY) |
| Channel indication | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 |
| Cable channel | W+26<br>(ZZ) | W+27<br>(AAA) | W+28<br>(BBB) | A-5 | A-4 | A-3 | A-2 | A-1 | 4a<br>(A-8) | | | | | | |
| Channel indication | 62 | 63 | 64 | 69 | 70 | 71 | 72 | 73 | 74 | | | | | | |

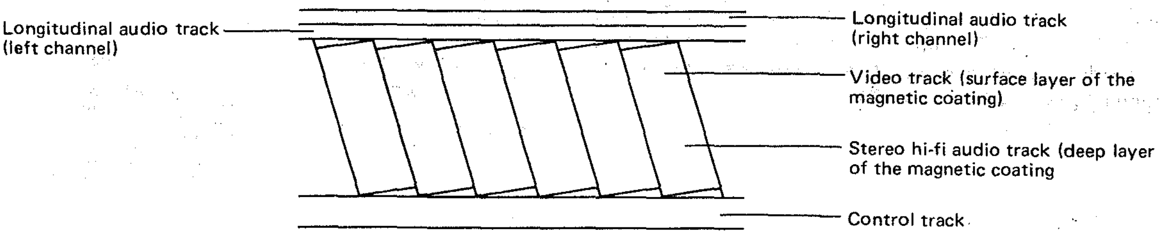
- Cable companies usually convert UHF channels to other cable channel numbers. Check with your local cable company.

# INFORMATION ON THE HR-D725U'S AUDIO SYSTEM

To provide a true hi-fi audio accompaniment to video entertainment and, at the same time, compatibility with regular VHS tapes, the HR-D725U employs a newly-developed audio recording system. Hi-fi audio signals (2-channel) are recorded deep into the tape's magnetic coating, simultaneously with the video signal that is recorded on top of the audio signals in a shallower layer. At the same time, another audio head records normal audio (2-channel) onto the usual longitudinal audio tracks. Since these longitudinal audio tracks are exactly the same as on regular stereo VHS tapes, tapes recorded on the HR-D725U can be played back on other stereo VHS machines, and vice versa, in terms of audio recorded on the longitudinal tracks. Also, these longitudinal tracks can be replaced later with new recordings independently from the video signal through audio dubbing so that more personal and creative sound effects can be produced.

**CAUTION:**
The hi-fi soundtrack recorded with the HR-D725U cannot be reproduced with video equipment other than Hi-Fi VHS.

**Tape pattern recorded with the HR-D725U**

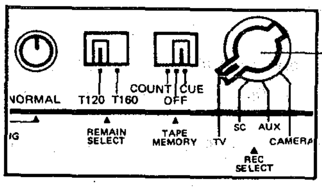

Longitudinal audio track (left channel)
Longitudinal audio track (right channel)
Video track (surface layer of the magnetic coating)
Stereo hi-fi audio track (deep layer of the magnetic coating
Control track

Hi-fi audio recording and reproduction are available only from the hi-fi audio track while the longitudinal audio tracks provide normal audio.

**The hi-fi and normal soundtracks are recorded simultaneously,** and audio dubbing is applicable only to the normal audio.

- When recording TV programs, the audio signal is recorded onto both channels (left and right channels) simultaneously.
- When recording with a camera, sound from the camera's built-in microphone is recorded on either the left channel or both channels, depending on the type of camera used. Refer to the chart on page 12.
- Stereo recording can be performed from any stereo source connected to the AUDIO LINE IN LEFT and RIGHT connectors (or microphones connected to the MIC LEFT and RIGHT jacks) while recording video signals from the VIDEO IN connector, or from microphones connected to the MIC jacks while recording video signals from the CAMERA connector.

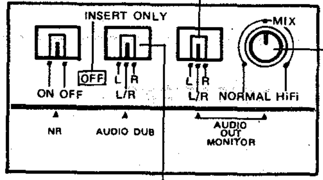
## Switches and controls relevant to audio source and channel selection



**REC SELECT switch**
This switch selects the recording input signals, both video and audio; the SC position enables video and normal audio to be recorded from the built-in tuner and Hi-Fi audio from the AUDIO LINE IN connectors. Use this position when recording FM simulcast programs or recording any audio source connected to the AUDIO LINE IN connectors while recording a TV program.

- To use the HR-D725U for audio-only recordings like an audio tape recorder, set the REC SELECT switch to AUX and connect an audio source, such as an FM tuner, to the AUDIO LINE IN connectors.

**AUDIO OUT MONITOR switch**
This switch selects the channel which you want to listen to.
L: left channel
L/R: stereo listening (Refer to page 6.)
R: right channel



**AUDIO OUT MONITOR control (Audio mixing volume control)**
There are two pairs of audio output connectors on the rear panel, one pair (Hi-Fi AUDIO OUT) delivering only hi-fi audio and the other pair (MIXED AUDIO OUT) delivering both hi-fi and normal audio. This control adjusts the relative sound level of the two soundtracks, hi-fi and normal, output from the MIXED AUDIO OUT connectors, the PHONES jack or the RF OUT connector. When you wish to listen only to hi-fi audio, turn this control fully clockwise.

- This control is effective during recording and playback, but has no effect on the recordings themselves.
- If a tape having the same soundtrack on both the normal and hi-fi audio tracks is played back, turn this control fully in either direction, otherwise a slight time difference will be noticeable between the two soundtracks.
- This control has no effect on the output from the HI-FI AUDIO OUT connectors, from which the hi-fi audio signals are always available.

**AUDIO DUB switch**
*This switch is effective only for the longitudinal audio tracks (normal audio).*
L: to replace only the left channel sound.
L/R: for stereo audio dubbing.
R: to replace only the right channel sound.
The function of this switch in the Insert Edit mode is fully explained on page 31.
The charts on the next page will help clarify the sound recording possibilities in various situations.

## Two-channel recording possibilities

Several ways of recording are possible depending on the setting of the **REC SELECT** switch (which also selects the video signal source) and the type of audio input.
"Recorded on" applies to both hi-fi and longitudinal audio tracks, unless otherwise specified.

| **Setting of the REC SELECT switch**<br>**Audio source** | TV | SC | AUX | CAMERA | **Remarks** |
|---|---|---|---|---|---|
| Soundtrack of TV program (monaural) | Recorded on LEFT and RIGHT channels. | Recorded on LEFT and RIGHT channels. (Longitudinal audio tracks only.) | – | – | The same monaural sound is recorded on both channels. |
| Camera's built-in mike | – | – | – | Recorded on LEFT channel*. | – |
| Recorder's LEFT mike only | Mixed on LEFT and RIGHT channels. | Mixed on LEFT and RIGHT channels. (Hi-fi audio only) | Mixed on LEFT and RIGHT channels. | Mixed on LEFT and RIGHT channels. | Microphone input is always mixed; in the SC position, it is mixed with hi-fi audio, but not recorded on longitudinal audio tracks. |
| Recorder's RIGHT mike only | Mixed on RIGHT channel. | Mixed on RIGHT channel. (Hi-fi audio only) | Mixed on RIGHT channel. | Mixed on RIGHT channel. | |
| Recorder's LEFT and RIGHT mikes | Mixed on the corresponding channels. | Mixed on the corresponding channels (Hi-fi audio only) | Mixed on the corresponding channels. | Mixed on the corresponding channels. | |
| AUDIO LINE IN LEFT connector only | – | Recorded on LEFT channel. (Hi-fi audio only.) | Recorded on LEFT channel. | – | – |
| AUDIO LINE IN RIGHT connector only | – | Recorded on RIGHT channel. (Hi-fi audio only.) | Recorded on RIGHT channel. | – | – |
| Both AUDIO LINE IN connectors | – | Recorded on the corresponding channels. (Hi-fi audio only.) | Recorded on the corresponding channels. | – | – |

*Depends on the type of camera used. See chart below.

**Notes:**

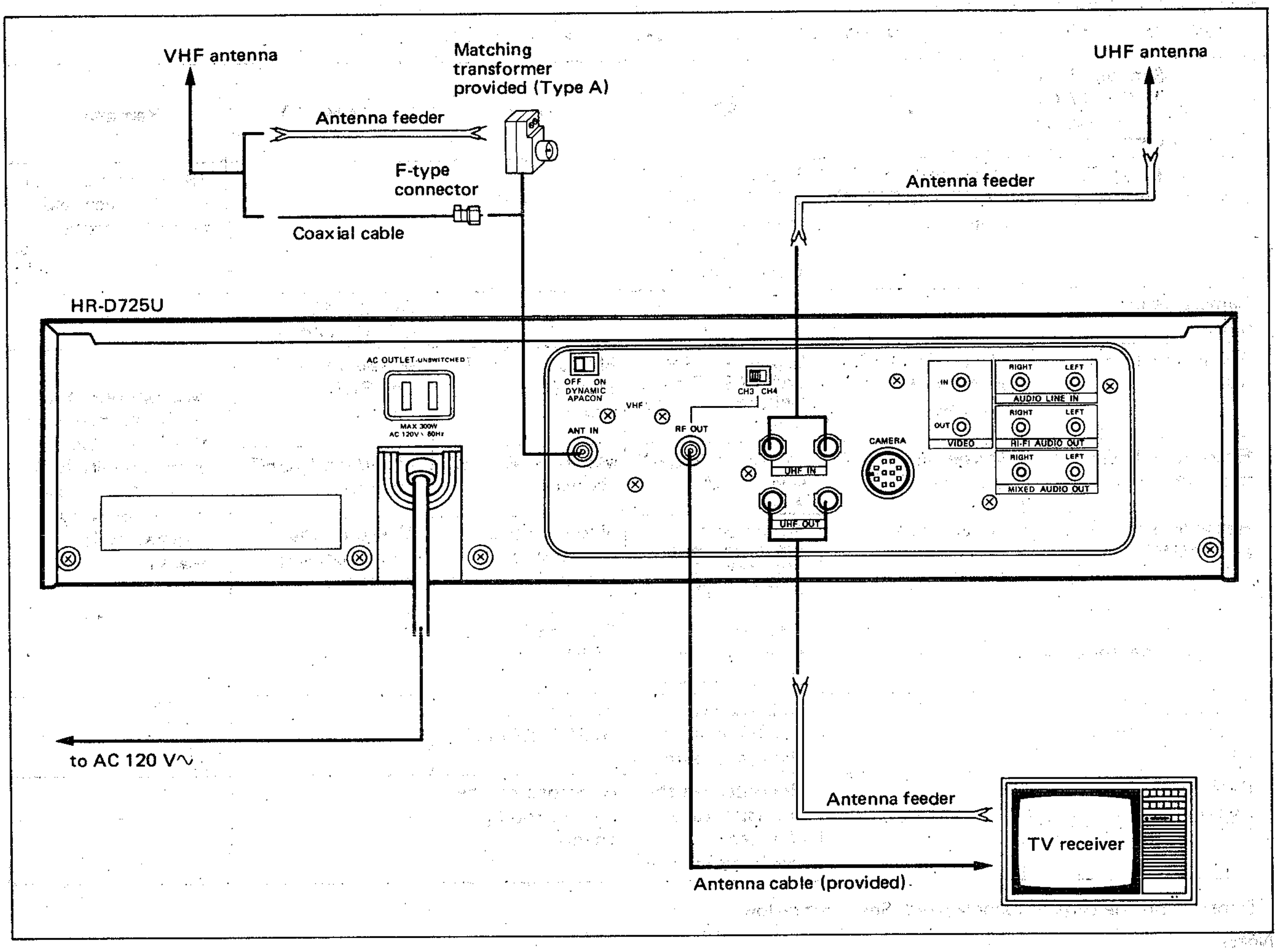
- Do not leave microphone(s) connected to the MIC jacks unless needed; microphone input will be always mixed with the corresponding audio signals on hi-fi or longitudinal audio tracks. (Only when the REC SELECT switch is in the SC position, the longitudinal audio tracks are not affected by the microphone input.)
- The same audio recording possibilities apply to audio dubbing (performed only on longitudinal audio tracks). However, the actual dubbing channel can be selected with the AUDIO DUB switch.

## Sound recording possibilities depending on the type of camera and the connection of microphones

| Camera | Microphone | Soundtrack |
|---|---|---|
| Ordinary video camera | Camera's built-in mike | Recorded on LEFT channel. |
| | Recorder's LEFT mike | Recorded on LEFT and RIGHT channels.<br>(Sound from camera's built-in mike is mixed on LEFT channel.) |
| | Recorder's RIGHT mike | Camera's built-in mike is recorded on LEFT channel and recorder's RIGHT mike is recorded on RIGHT channel. |
| | Recorder's LEFT and RIGHT mikes | Stereo recording.<br>(Sound from camera's built-in mike is mixed on LEFT channel.) |
| GZ-S5U (stereo-capable) | Camera's exclusive stereo microphone | Stereo recording (The mike's STEREO/MONO switch should be in the STEREO position.) |
| | External monaural mike | Recorded on LEFT channel. |
| | External stereo mike | Stereo recording. |

# CONNECTIONS

## CONNECTION TO A TV RECEIVER


VHF antenna
Matching transformer provided (Type A)
UHF antenna
Antenna feeder
F-type connector
Antenna feeder
Coaxial cable
HR-D725U
AC OUTLET UNSWITCHED
MAX 300W AC 120V ~ 60Hz
OFF ON
DYNAMIC APACON
VHF
ANT IN
RF OUT
CH3 CH4
UHF IN
UHF OUT
CAMERA
IN
OUT
VIDEO
RIGHT
LEFT
AUDIO LINE IN
RIGHT
LEFT
HI-FI AUDIO OUT
RIGHT
LEFT
MIXED AUDIO OUT
to AC 120 V∿
Antenna feeder
TV receiver
Antenna cable (provided)

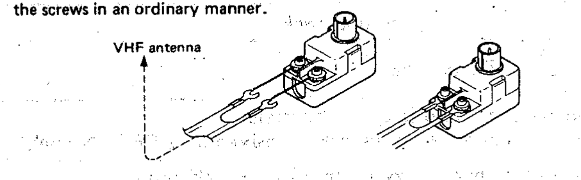
**Procedure**

- Remove the VHF and UHF antenna cables from the TV receiver and reconnect to the HR-D725U as illustrated. The HR-D725U is then ready to record off-air programs.

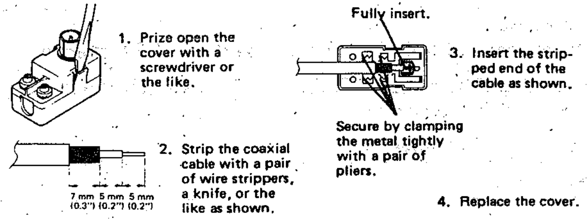
- Connect the HR-D725U to the TV receiver using the VHF antenna cable (provided) and a UHF antenna cable as illustrated. The TV receiver is then ready to receive TV broadcast programs as well as accommodate video cassette playback.

**How to affix the matching transformer to your VHF antenna cable**

- If your VHF antenna cable is a 300-ohm flat feeder, connect the two lugs to the screws in an ordinary manner.


VHF antenna

- If your VHF antenna cable is a 75-ohm coaxial cable, proceed as follows:


7 mm (0.3")
5 mm (0.2")
5 mm (0.2")

1. Prize open the cover with a screwdriver or the like.
2. Strip the coaxial cable with a pair of wire strippers, a knife, or the like as shown.
3. Insert the stripped end of the cable as shown.
4. Replace the cover.

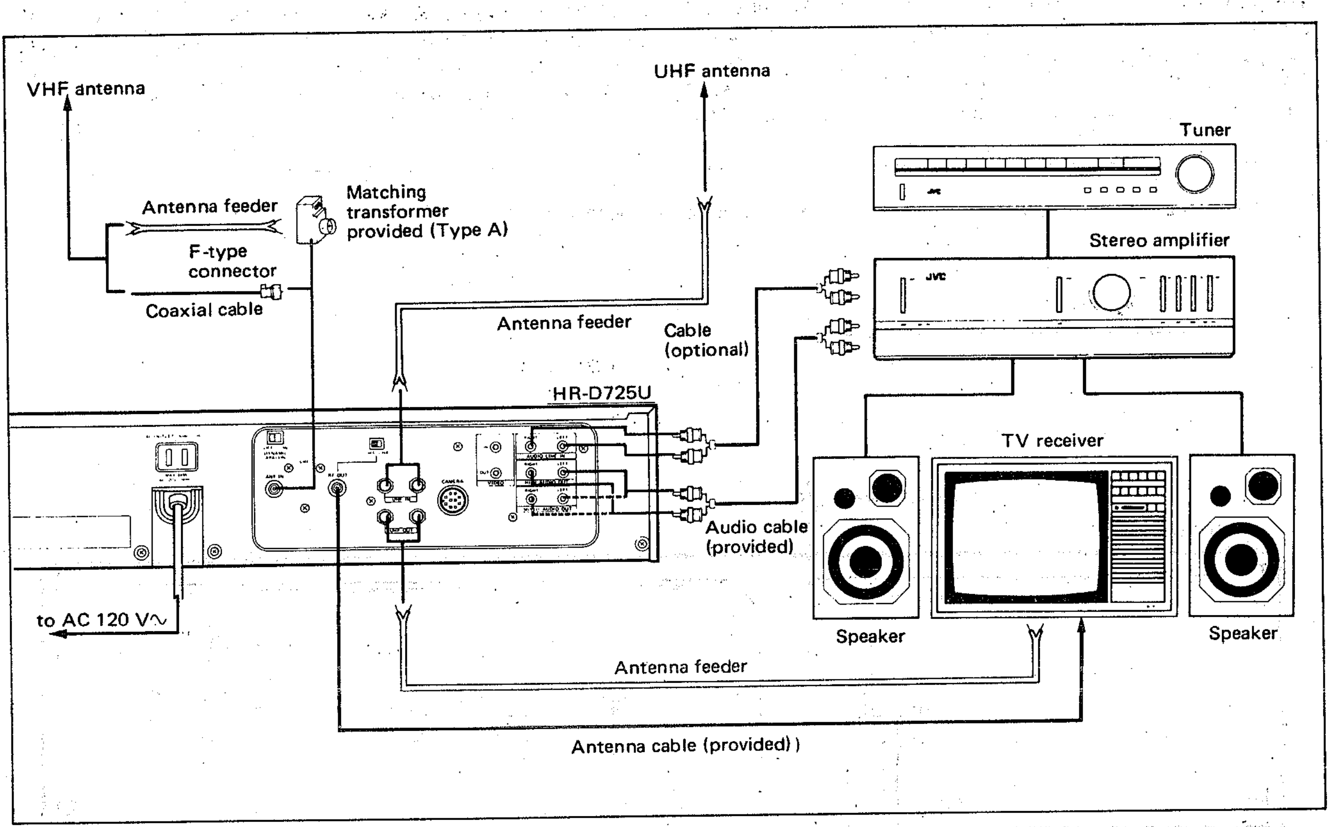
Fully insert.

Secure by clamping the metal tightly with a pair of pliers.

**For reference**

- Previously, when you were using only the TV receiver, broadcast signals went to the TV receiver directly from the antenna.
  Now, after you have connected the HR-D725U to the TV receiver, broadcast signals enter the HR-D725U directly from the antenna (to be received by the built-in tuner for recording onto the cassette tape) and go to the TV receiver through the HR-D725U (to be received by the TV receiver's tuner for ordinary viewing).
- In order to transmit entering broadcast signals to the TV receiver, an antenna circuit is built into the HR-D725U. This antenna circuit must function as long as you are viewing TV programs even though you are not using the HR-D725U. If the AC power cord is unplugged from the AC outlet, the antenna circuit does not function. Therefore, normally, leave the AC power cord plugged to an AC outlet.

## CONNECTION TO A STEREO SYSTEM


VHF antenna
UHF antenna
Tuner
Antenna feeder
Matching transformer provided (Type A)
F-type connector
Coaxial cable
Stereo amplifier
Antenna feeder
Cable (optional)
HR-D725U
TV receiver
Audio cable (provided)
to AC 120 V∿
Speaker
Speaker
Antenna feeder
Antenna cable (provided) )

**Procedure**

- Remove the VHF and UHF antenna cables from the TV receiver and reconnect to the HR-D725U as illustrated.
- Connect the HR-D725U to the TV receiver using the VHF antenna cable (provided) and a UHF antenna cable as illustrated.
- Connect the AUDIO LINE IN LEFT and RIGHT connectors of the HR-D725U to the recording output terminals of the amplifier. (Exactly as one hooks up an audio cassette deck.)
- For audio output connection there is a choice. If you wish to listen to only hi-fi audio, connect the HI-FI AUDIO OUT connectors of the HR-D725U to the AUX IN terminals of the amplifier. If you wish to make your setup ready to deliver both hi-fi and normal audio, use the MIXED AUDIO OUT connectors.
- Observe L and R when connecting the audio input and output connectors of the HR-D725U to a stereo amplifier.

**CAUTION:**
The HR-D725U has a dynamic range of more than 80 dB with regards to its hi-fi audio capability. It is recommended that you check the maximum level if you are going to listen to the hi-fi audio signals through a stereo amplifier. A sudden surge in speaker input may cause speaker damage.

With this setup, you can enjoy prerecorded stereo video tapes in stereo (or hi-fi stereo if they are Hi-Fi VHS tapes) while viewing them on a regular TV receiver, and also you can record FM simulcast television programs with hi-fi audio accompaniment. See page 24.

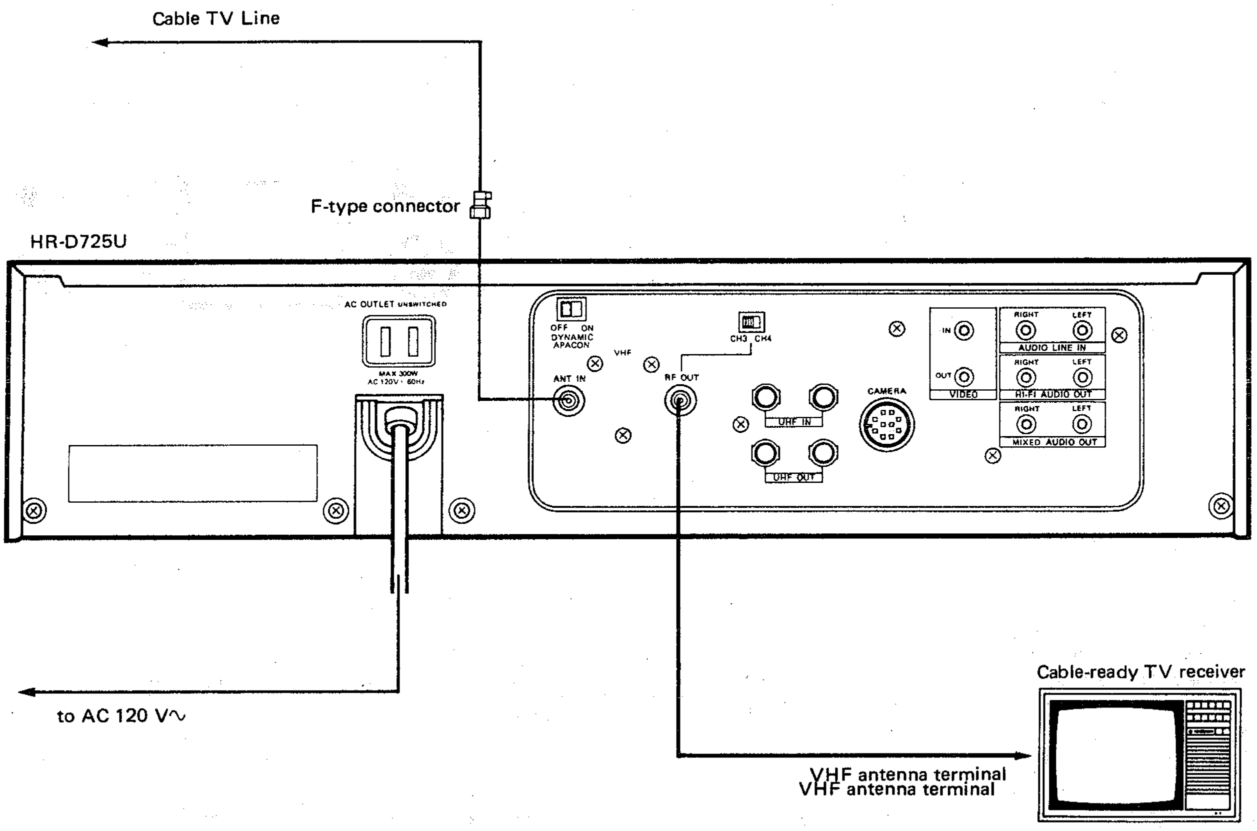
- You can also record only audio (without recording any video signal) on both hi-fi and longitudinal audio tracks. This means you can record a continuous 8-hour FM program onto a single cassette (T-160 cassette). For this purpose, the REC SELECT switch should be in the AUX position and nothing should be connected to the VIDEO IN connector.

**CAUTION:**
Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set, otherwise the video playback picture will not be normal because of mutual interference.

## CONNECTION TO CABLE OR PAY TELEVISION

There are several different systems of cable television at present. Therefore, there may be various situations where you use your HR-D725U in combination with cable TV services. The HR-D725U is pretuned to 57 cable TV channels, in addition to VHF and UHF channels, to accommodate the increasing popularity of cable television. When you connect the HR-D725U to your cable TV system, the following should be taken into consideration. To receive cable TV broadcasts, press the BAND button (located on the glide-out control panel) to CATV.

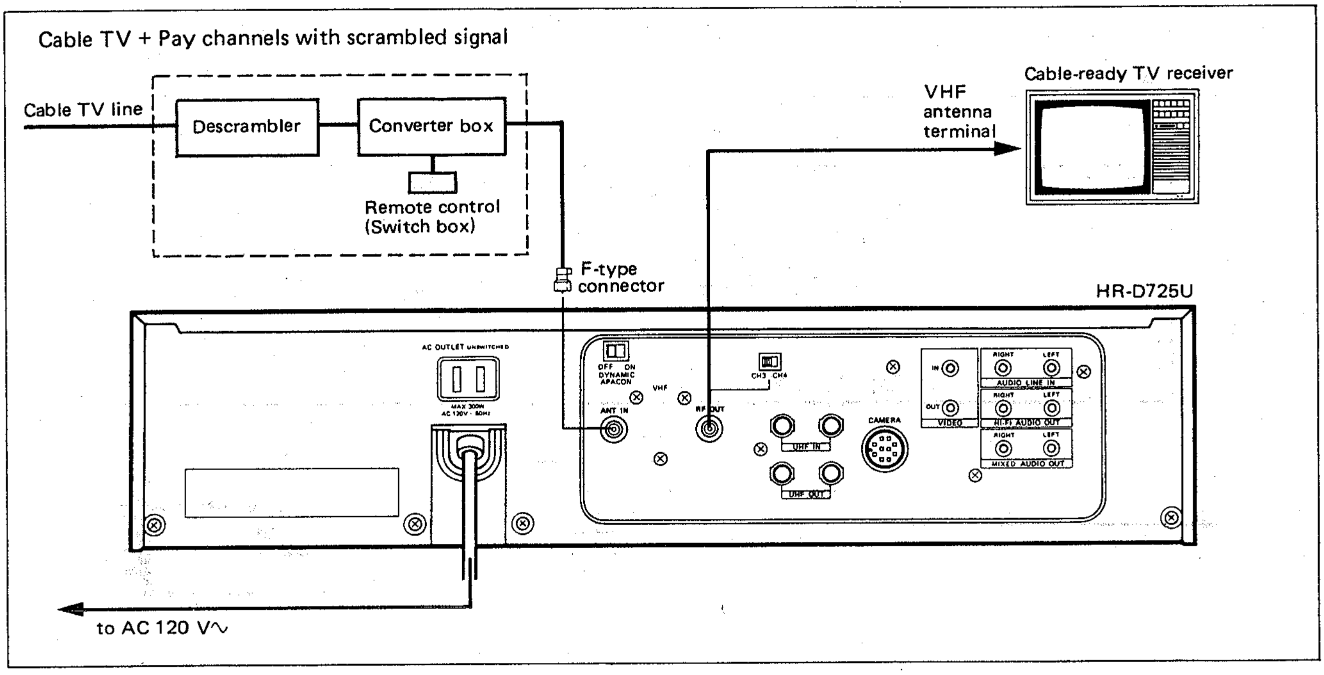
Regular cable TV (without scrambled signals) using cable-ready TV receiver


Cable TV Line
F-type connector
HR-D725U
AC OUTLET UNSWITCHED
MAX 300W
AC 120V ~ 60Hz
OFF ON
DYNAMIC APACON
VHF
ANT IN
RF OUT
CH3 CH4
UHF IN
UHF OUT
CAMERA
IN
OUT
VIDEO
RIGHT
LEFT
AUDIO LINE IN
RIGHT
LEFT
HI-FI AUDIO OUT
RIGHT
LEFT
MIXED AUDIO OUT
to AC 120 V∿
Cable-ready TV receiver
VHF antenna terminal

In most areas served by cable companies, all local broadcasts are carried on the cable with additional programming. (VHF broadcasts are carried as they are and UHF broadcasts are converted into unoccupied VHF channels or cable TV channels.) In this case, a simple cable connection is all that is required. In this situation, the BAND button (located on the slide out control panel) should always be set to CATV (▬).

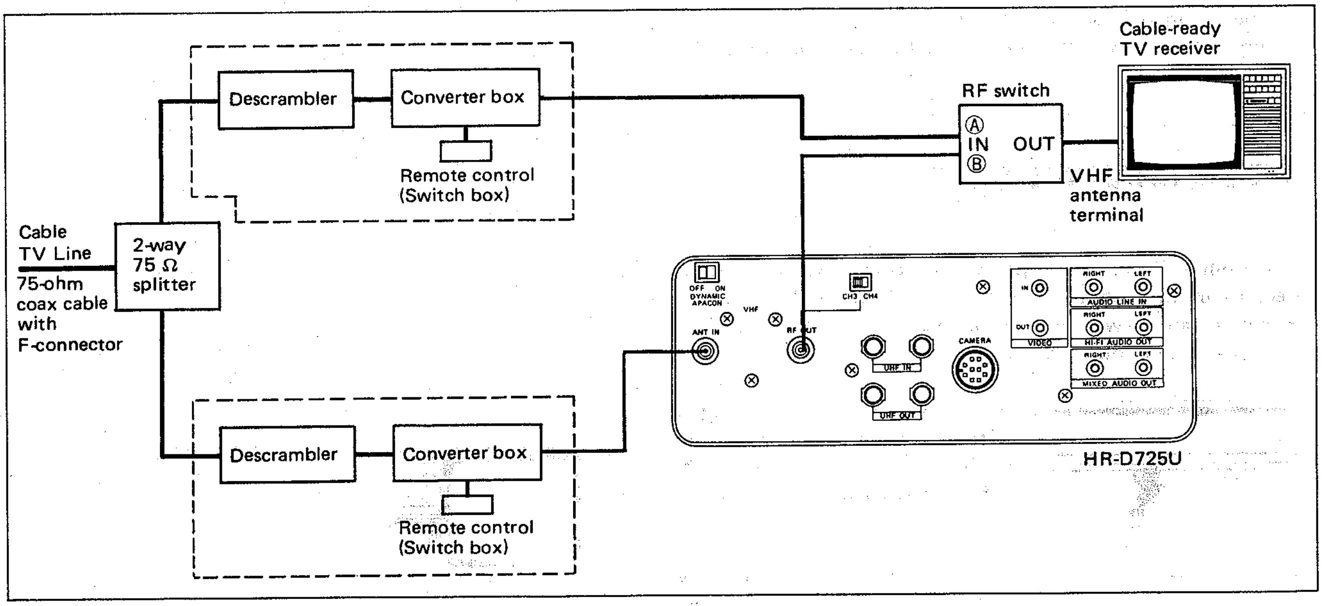
- Connect the cable line to the VHF/ANT IN terminal of the HR-D725U.
- Connect the VHF RF OUT terminal of the HR-D725U to the VHF antenna terminal of your television, using the provided cable.
- You can record any program while watching it by setting the VIDEO/TV button to VIDEO and the television's channel selector to the video channel (3 or 4, see page 17).
- You can record any program while watching another by setting the VIDEO/TV button to TV, and selecting the program to be recorded with the HR-D725U's channel selector, and the one to be viewed with the television's channel selector having its TV/CATV switch set to CATV (assuming the television itself has full channel selection capability).

Cable TV + Pay channels with scrambled signal


Cable TV line
Descrambler
Converter box
Remote control
(Switch box)
F-type connector
VHF antenna terminal
Cable-ready TV receiver
HR-D725U
AC OUTLET UNSWITCHED
MAX 300W AC 120V 60Hz
OFF ON DYNAMIC APACON
VHF
ANT IN
RF OUT
CH3 CH4
UHF IN
UHF OUT
CAMERA
IN
OUT
VIDEO
RIGHT LEFT
AUDIO LINE IN
HI-FI AUDIO OUT
MIXED AUDIO OUT
to AC 120 V∿

In this situation, it is necessary to connect the converter box (with the descrambler supplied by the cable TV company) between the cable line and the VHF antenna input terminal on the HR-D725U.
Leave the TV channel selector on channel 3 (or 4) at all times.

- Set the VIDEO/TV button on the HR-D725U to the VIDEO mode and select channel 3 (or 4) on the HR-D725U channel button.
  You can watch or record any channel by selecting it with the channel buttons of the remote control on the converter box.
- When you want to record one channel while watching another, connect as follows:

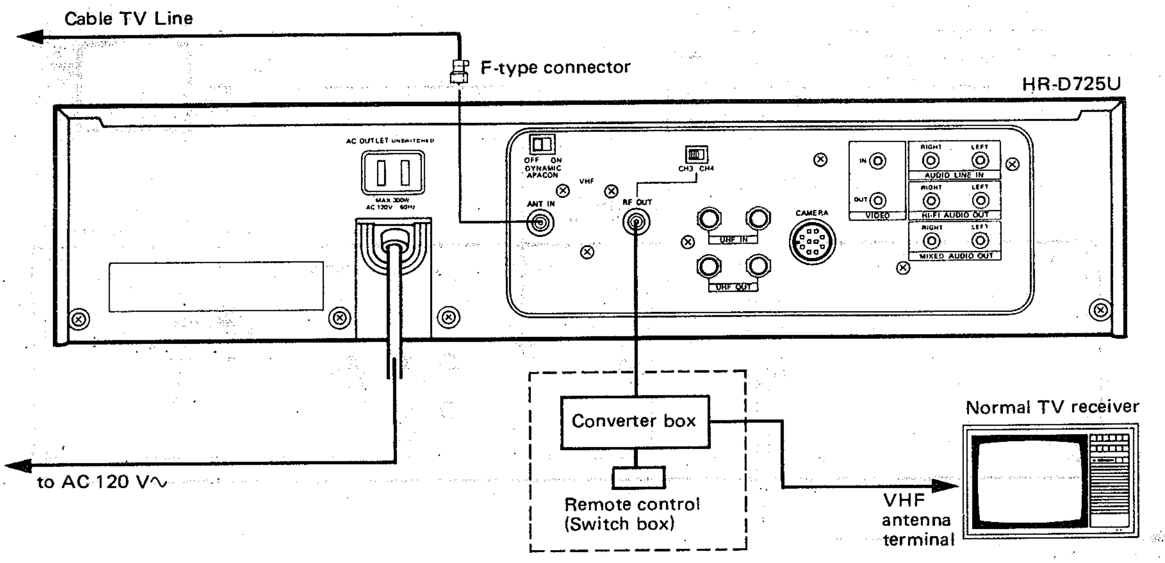

Cable TV Line
75-ohm coax cable with F-connector
2-way 75 Ω splitter
Descrambler
Converter box
Remote control
(Switch box)
Descrambler
Converter box
Remote control
(Switch box)
RF switch
Ⓐ IN OUT
Ⓑ
Cable-ready TV receiver
VHF antenna terminal
HR-D725U
OFF ON DYNAMIC APACON
VHF
ANT IN
RF OUT
CH3 CH4
UHF IN
UHF OUT
CAMERA
IN
OUT
VIDEO
RIGHT LEFT
AUDIO LINE IN
HI-FI AUDIO OUT
MIXED AUDIO OUT

In this situation you can record a Pay channel program while watching another channel. This hookup will work for cable TV systems having only the picture scrambled.

- Two descramblers are not always necessary.
- To record one program while watching another, set the RF switch to the appropriate ("A" or "B") position.

**CAUTION**
Pay channels are scrambled in many different ways. Please contact your cable TV company for any questions concerning hookups or cable TV operation.

Regular cable TV using normal (non-cable-ready) TV receiver


Cable TV Line
F-type connector
HR-D725U
AC OUTLET UNSWITCHED
OFF ON
DYNAMIC APACON
ANT IN
VHF
CH3 CH4
RF OUT
UHF IN
UHF OUT
CAMERA
IN
OUT
VIDEO
RIGHT LEFT
AUDIO LINE IN
HI-FI AUDIO OUT
MIXED AUDIO OUT
Converter box
Remote control
(Switch box)
Normal TV receiver
VHF
antenna
terminal
to AC 120 V∿

When connecting to a normal TV receiver (without cable channels), it is necessary to connect a converter box with a remote control (supplied by the cable TV company) between the HR-D725U and the TV receiver. Leave the TV channel selector set to channel 3 (or 4) at all times.

- Connect the converter box to the RF OUT terminal of the HR-D725U and the VHF antenna terminal of the TV receiver.
- When the VIDEO/TV button on the HR-D725U is set to the TV mode, use the converter box to select any channel you desire to watch. This setting bypasses the HR-D725U completely.
- When the VIDEO/TV button on the HR-D725U is set to the VIDEO mode, select channel 3 (or 4) on the converter box. You can watch or record any channel by selecting it with the CHANNEL buttons of the HR-D725U instead of the channel selector of the converter box.
- When you want to record one channel while watching another, set the VIDEO/TV button to the TV mode, and select the channel to be recorded with the CHANNEL buttons of the HR-D725U and the channel to be viewed with the channel selector of the converter box.

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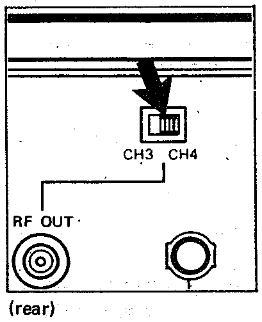
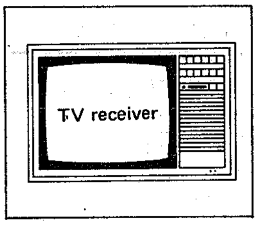
## VIDEO CHANNEL SETTING

The built-in RF converter permits playback of video and audio recordings through a TV receiver. The signals from the RF converter are viewed through a vacant channel not used for broadcasting in your viewing area.


CH3 CH4
RF OUT
(rear)

The converter channel of all units is set to CH3 prior to shipment from the factory. Reset the channel to CH4 in areas where channel 3 is employed for broadcasting.

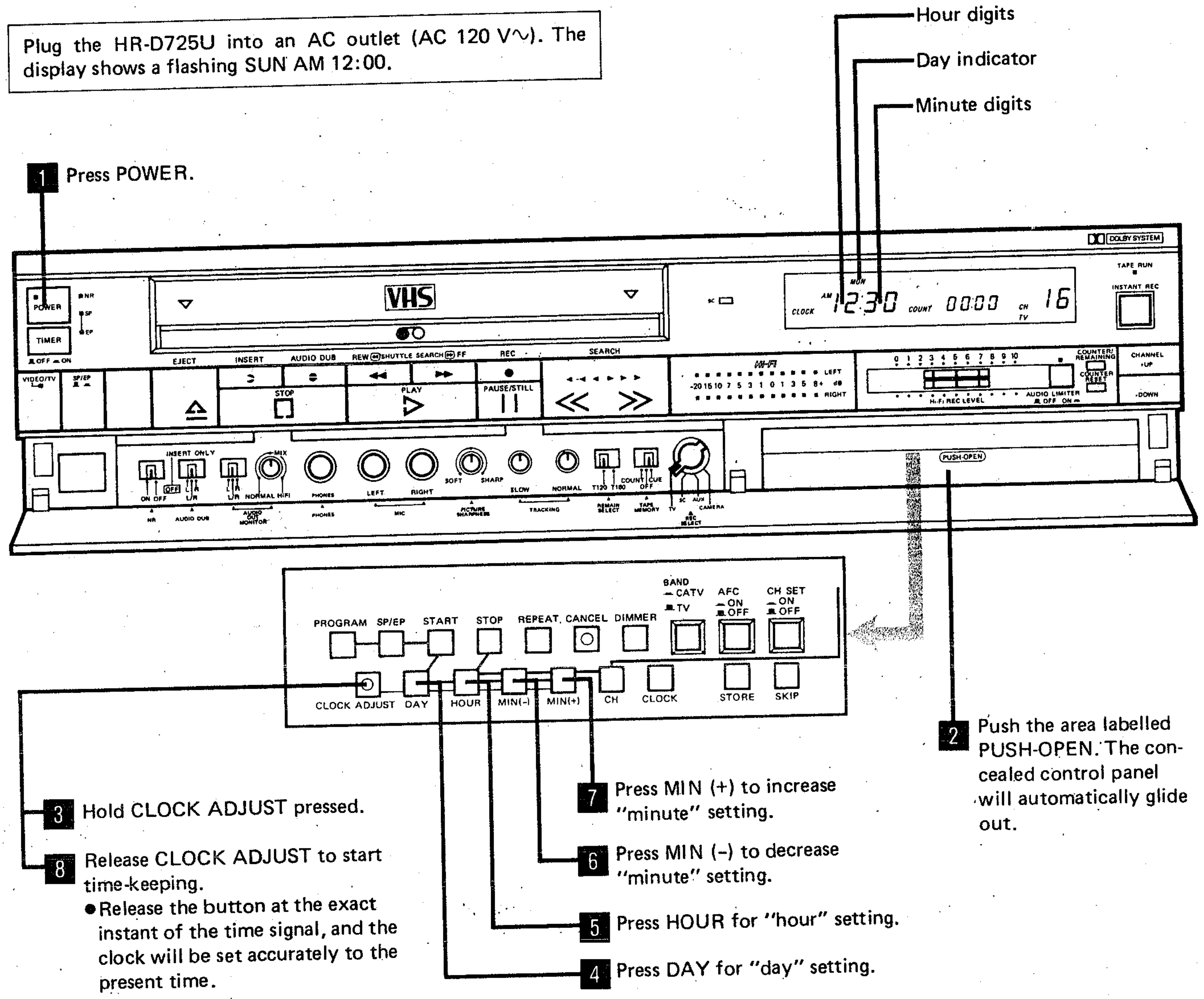
For this purpose, with UNIT UNPLUGGED, carefully insert a small straight-slot screwdriver into the hole provided on the rear of the unit and slide the channel select switch to CH4.


TV receiver

This is YOUR video channel. To view video cassettes, always set the TV channel selector to either channel 3 or 4.

# CLOCK SETTING

Plug the HR-D725U into an AC outlet (AC 120 V∿). The display shows a flashing SUN AM 12:00.


Hour digits
Day indicator
Minute digits
POWER
TIMER
VHS
CLOCK AM 12:30 COUNT 00:00 CH 16
EJECT
INSERT
AUDIO DUB
REW SHUTTLE SEARCH FF
REC
SEARCH
STOP
PLAY
PAUSE/STILL
PUSH-OPEN
PROGRAM
SP/EP
START
STOP
REPEAT. CANCEL
DIMMER
BAND CATV TV
AFC ON OFF
CH SET ON OFF
CLOCK ADJUST
DAY
HOUR
MIN(-)
MIN(+)
CH
CLOCK
STORE
SKIP

**1** Press POWER.

**2** Push the area labelled PUSH-OPEN. The concealed control panel will automatically glide out.

**3** Hold CLOCK ADJUST pressed.

**4** Press DAY for "day" setting.

**5** Press HOUR for "hour" setting.

**6** Press MIN (-) to decrease "minute" setting.

**7** Press MIN (+) to increase "minute" setting.

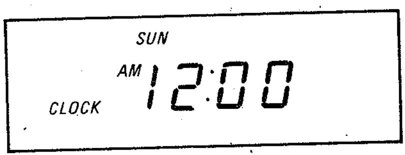
**8** Release CLOCK ADJUST to start time-keeping.
- ●Release the button at the exact instant of the time signal, and the clock will be set accurately to the present time.

---

**Note**
- This clock uses the 12-hour, AM/PM time indication.
- Holding the DAY, HOUR, MIN (+) and MIN (-) buttons pressed continuously advances the corresponding indication automatically. Pressing either of them once advances the indication in single increments only.
- Any sequence of setting the day, hour and minute is possible.

**Power failure indicator**

The entire clock display may start to flicker fast. This is not a malfunctioning of the clock, but it indicates that there has been a power failure in excess of 10 minutes. Re-adjusting the time restores the normal condition of the clock display.


SUN
AM 12:00
CLOCK

- If the period of power outage is within about 10 minutes, correct time-keeping continues when power is reapplied.
- During this 10-minute period, the built-in memory back-up capacitor maintains time-keeping and preset timer memory, though the display blacks out.

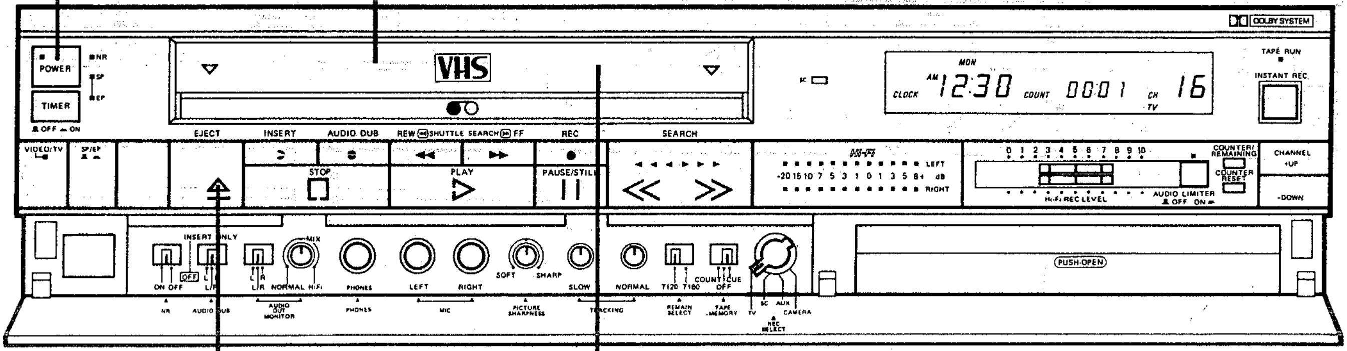
# LOADING AND UNLOADING A CASSETTE

**Loading**

**1** Press POWER.

**2** Insert a cassette with its labelled side facing you.
- With a cassette inserted, the red door flap appears and displays the mark to indicate "cassette inserted".

**Note:**
It might be that after unpacking your new recorder the black door flap with the "cassette inserted" mark is displayed. This is not due to any defect of the unit. Simply insert a cassette. After the first loading/unloading cycle, the door will function properly to show the blue flap when no cassette is inside and the black flap when a cassette is inserted.


POWER
TIMER
VHS
CLOCK
AM 12:30
COUNT
0001
CH
TV
16
TAPE RUN
INSTANT REC
DOLBY SYSTEM
EJECT
INSERT
AUDIO DUB
REW SHUTTLE SEARCH FF
REC
SEARCH
STOP
PLAY
PAUSE/STILL
Hi-Fi REC LEVEL
AUDIO LIMITER
COUNTER/REMAINING
COUNTER RESET
CHANNEL +UP
-DOWN
INSERT ONLY
MIX
PHONES
LEFT
RIGHT
SOFT
SHARP
SLOW
NORMAL
PUSH-OPEN

**Unloading**

**1** Press EJECT.
The cassette will be ejected.

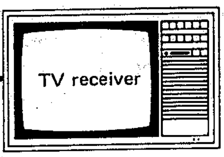
**2** Remove the cassette from the loading slot.
- When no cassette is inserted, the blue door flap appears.

**Notes:**
- Be sure to insert the cassette firmly into the slot; otherwise, it will be automatically ejected.
- The automatic loading mechanism will operate only when the cassette is inserted correctly.
- A cassette inverted cannot be inserted.

**Caution**
- Since the HR-D725U employs a motorized cassette loading system, loading and unloading the cassette are only possible when the power is applied to the recorder section. Do not force the cassette into the cassette loading slot while the POWER indicator is off.
- Do not attempt to pull out the cassette once automatic loading has started.

# PLAYING BACK A VIDEO CASSETTE

**1** Switch ON.
Adjust the TV receiver's channel to the video channel (3 or 4).


TV receiver

**REW/SHUTTLE SEARCH button**
- To rewind the tape, press this button in the Stop mode.
- To shuttle search the tape in the reverse direction, hold this button pressed in the Play mode.
- The search speed is 7 times normal in both the SP and EP modes.

PAUSE/STILL button

**Variable-speed SEARCH button**
To search in the reverse direction, press the " ≪ " side. To search in the forward direction, press the " ≫ " side. When the button is pressed once, slow-motion playback at 1/40 the normal speed is engaged. Each time this button is pressed, the speed changes, first from 1/40 to 1/20, then to 1/10, then to 1/5. After slow-motion at 1/5 normal speed, normal-speed playback is engaged and, then, the mode changes to fast-motion search with the speed increasing to 3, 5 and finally 7 times normal speed. If the button is depressed continuously, the speed changes continuously in the same order.

**7** The VIDEO indicator lights and the VIDEO mode is automatically engaged.

**2** Press POWER.

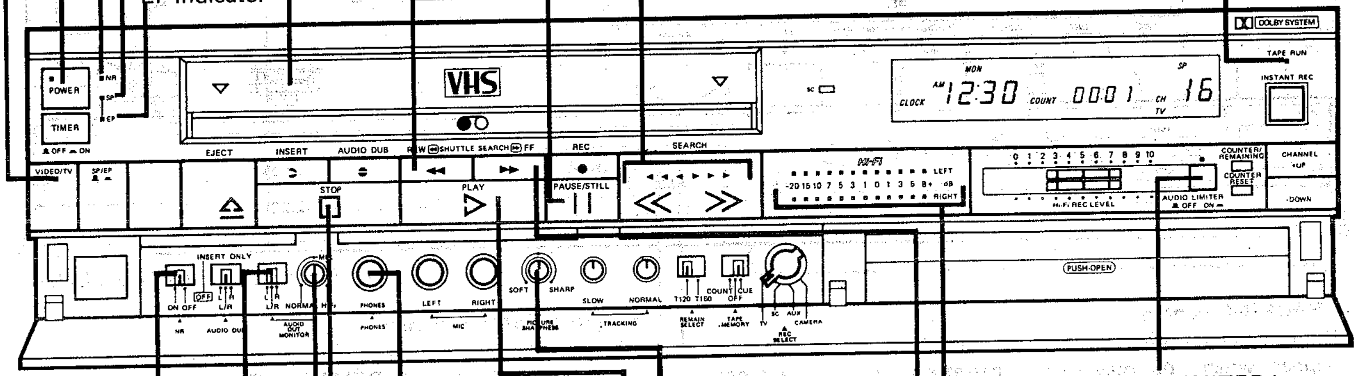
**3** Load a pre-recorded cassette.

NR indicator

SP indicator

EP indicator

Tape run indicator


DOLBY SYSTEM
TAPE RUN
INSTANT REC
POWER
NR
SP
EP
TIMER
OFF ON
VHS
MON
SP
CLOCK AM 12:30
COUNT 0001
CH 16
TV
VIDEO/TV
SP/EP
EJECT
INSERT
AUDIO DUB
REW SHUTTLE SEARCH FF
REC
SEARCH
STOP
PLAY
PAUSE/STILL
HI-FI
LEFT
dB
RIGHT
HI-FI REC LEVEL
COUNTER/REMAINING
COUNTER RESET
AUDIO LIMITER
OFF ON
CHANNEL
UP
DOWN
PUSH-OPEN
INSERT ONLY
ON OFF
L/R
NORMAL
HI-FI
NR
AUDIO OUT MONITOR
PHONES
LEFT
RIGHT
MIC
SOFT
SHARP
PICTURE SHARPNESS
SLOW
NORMAL
TRACKING
T120 T160
COUNT CUE OFF
REMAIN SELECT
TAPE MEMORY
TV
SC
AUX
CAMERA
REC SELECT

NR switch

PICTURE SHARPNESS control

AUDIO LIMITER button

**Hi-Fi level indicators**
LEDs light corresponding to the hi-fi audio signal level if the AUDIO LIMITER button is OFF.

**5** Set the AUDIO OUT MONITOR L/R switch as required.
- To play back stereo recorded tapes, set this switch to L/R.
- To play back tapes having independent soundtracks, select the corresponding channel.
- Monaural tapes can be played back in any position of this switch. However, it is advisable to set this switch to L/R for better sound quality.

**4** Press PLAY.

Headphone jack

**8** Press STOP at the end of the program.

**6** (Not applicable when the audio output from the rear panel HI-FI AUDIO OUT connectors is to be listened to.)
Adjust the relative level of hi-fi and normal audio depending on the situation.

**FF/SHUTTLE SEARCH button**
- To fast forward the tape, press this button in the Stop mode.
- To shuttle search the tape in the forward direction, hold this button pressed in the Play mode.
- The search speed is 7 times normal in both the SP and EP modes.

---

**Notes:**
- The SP/EP switch may be in either position. The SP, LP or EP mode recording is automatically detected and played back at a correct speed respectively. The corresponding indicator (SP or EP) will light. No indicator lights in the LP mode.
- The tape-end auto rewind mechanism functions in both the Play and Fast Forward modes.
- Set the NR switch to ON when playing back tapes recorded with Dolby NR. The NR indicator will light. Noise reduction is applied only to the normal audio tracks.
- When the PAUSE/STILL button is pressed during playback, a still picture will appear. The still picture can be advanced in a frame-by-frame manner each time this button is pressed. To cancel the Still mode, press the PLAY button.
- When the Still mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- With some televisions, the still picture may be unstable. This is not due to any defect of the unit.
- When listening through headphones, if the volume is too loud, reset the headphone volume select switch located on the bottom of the unit. (See page 8.)
- No special-effects playback is possible in the LP mode. When one of the special-effects playback buttons is pressed during playback of LP recorded tapes, the picture disappears from the screen. If you happen to press those buttons (PAUSE/STILL, SHUTTLE SEARCH or SEARCH) while playing an LP tape, simply press the PLAY button to restore the picture.

# TAPE COUNTER/REMAINING TIME COUNTER/COUNTER AND CUE SEARCH/TRACKING CONTROLS

**COUNTER/REMAINING button**

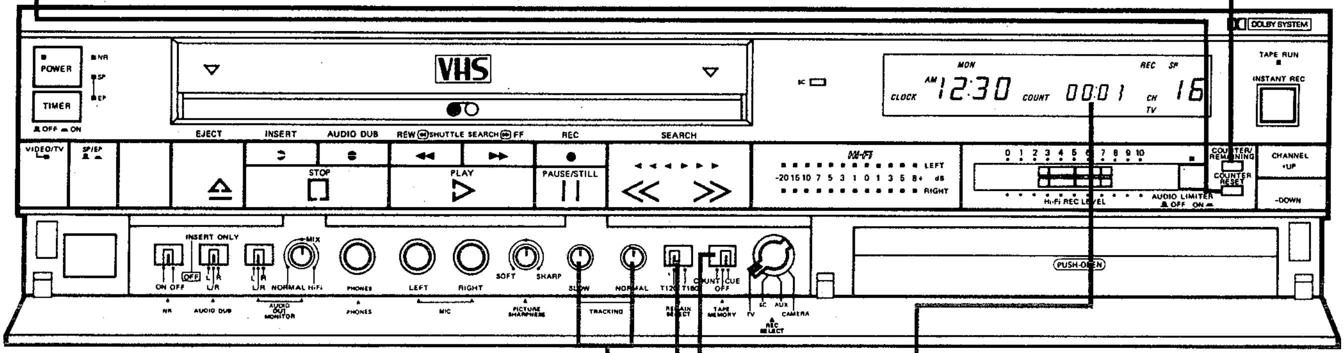
When the POWER button is pressed, the tape counter appears on the display with the COUNT indicator illuminated. To check the length of tape left, press the COUNTER/REMAINING button to engage the Remaining Time Counter mode. The REMAIN indicator will light and the reading will show the remaining tape length in hours and minutes. (It will take a brief period for the numerals to appear.) To change the display mode back to the tape counter, press the same button once again.

**Notes:**

- During recording, the remaining tape length is calculated in reference to the recording mode selected by the SP/EP button; during playback, it is calculated in reference to the recording mode of the tape being played (SP/LP/EP).
- No remaining tape length is indicated in the Channel Set mode (with the CH SET button pressed to ON), but horizontal bars appear in the display.

**COUNTER RESET button**

Press to reset the tape counter to "0000" for indexing the tape.


POWER
TIMER
VHS
EJECT
INSERT
AUDIO DUB
REW SHUTTLE SEARCH FF
REC
SEARCH
STOP
PLAY
PAUSE/STILL
CLOCK
AM 12:30
COUNT
0001
CH
TV
16
DOLBY SYSTEM
TAPE RUN
INSTANT REC
COUNTER/REMAINING
COUNTER RESET
CHANNEL UP
DOWN
Hi-Fi REC LEVEL
AUDIO LIMITER
LEFT
RIGHT
INSERT ONLY
MIX
SOFT
SHARP
PICTURE SHARPNESS
TRACKING
SLOW
NORMAL
T120
T160
REMAIN SELECT
COUNT
CUE
OFF
TAPE MEMORY
TV
CAMERA
REC SELECT
PUSH-OPEN

Counter/Tape Remaining Time display

**TRACKING controls**

If the playback picture contains noise bars (this is likely to happen when you play back a cassette which was recorded with a different video recorder unit), adjust the TRACKING controls. Use the NORMAL TRACKING control in normal-speed playback, and the SLOW TRACKING control in slow-motion playback. Turn them slowly in either direction until the noise bars move out of the picture frame. The NORMAL TRACKING control can also be used to correct hi-fi audio reproduction if noise or breaks are heard in it.

**Note**

After playing back that particular cassette, be sure to return the TRACKING controls to their center position.

**REMAIN SELECT switch**

In order for the remaining time counter to function properly, it is necessary to set this switch correctly.

T160: when using a T-160 cassette.
T120: when using a cassette other than T-160.

**TAPE MEMORY switch**

A. Counter Memory function

1. Press the COUNTER/REMAINING button to engage the Counter mode.
2. Press the COUNTER RESET button at a point which you may wish to locate later.
   - The tape counter will indicate "0000".
3. Set the TAPE MEMORY switch to COUNT.
4. Press the REW (or FF) button when you need to return to the designated point. The tape will rewind (or fast forward) and stop at about the "0000" counter reading.

B. Cue Search function

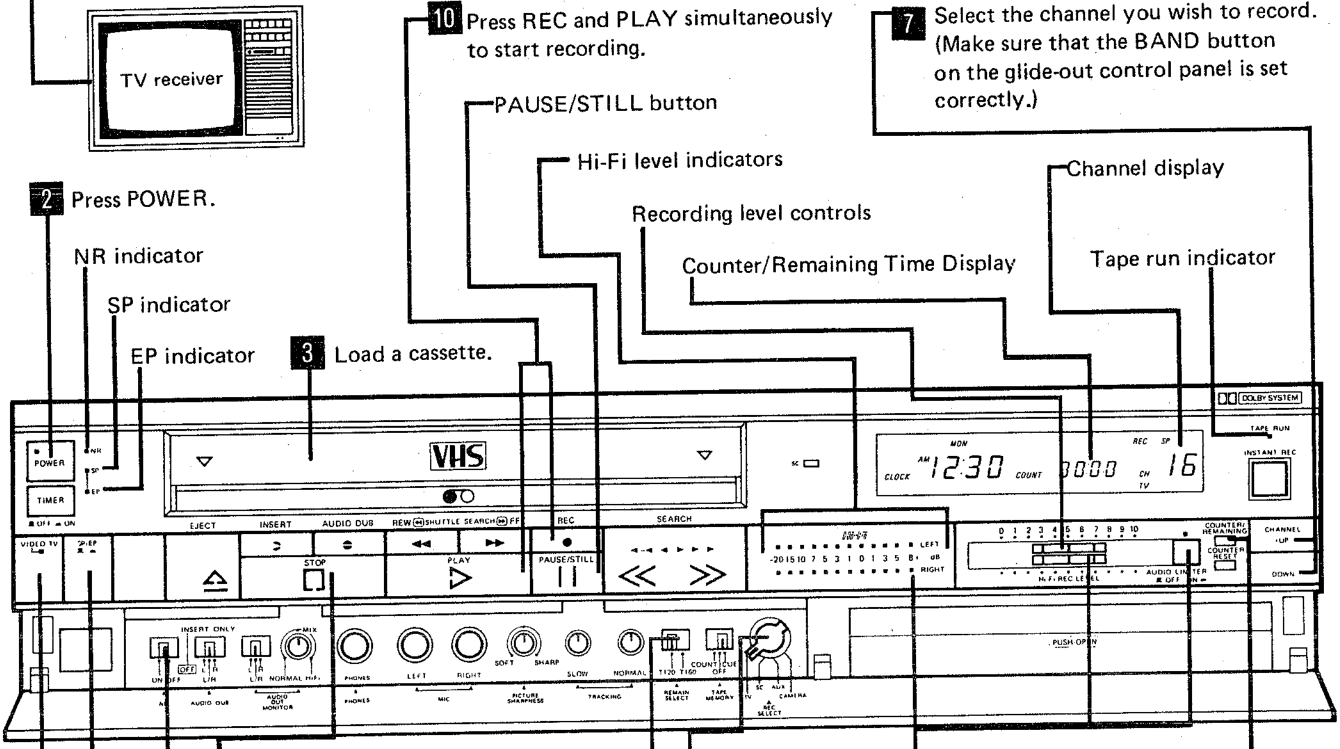
At the beginning of every recording, a cue signal is recorded on the tape. The cue search function enables the sensing of this cue signal and stops the tape at a point where a new recording was made. Similarly to the counter search function, this mode is applicable only in the Fast Forward and Rewind modes. If you wish to view the recorded material immediately after it was made, set the TAPE MEMORY switch to CUE. After recording, if you rewind the tape, it stops automatically where the recording was initiated (the cue signal position).

**Notes**

- The cue signal is recorded in the following cases:
  1. (1) When a recording is initiated from the Stop mode (STOP to REC).
  2. (2) When a timer recording is initiated (TIMER ON to REC). (If several programs are recorded continuously, no cue signal is recorded between programs. If there is a time period between the end of one program and the start of another, a cue signal is recorded when the new program is started.)
  3. (3) When a recording is initiated from the Play mode by pressing the PLAY button together with the REC button (PLAY to REC).

# RECORDING A TV PROGRAM WHILE WATCHING IT

Basic concept: receive the desired TV program with the built-in tuner and operate the tape section for recording.


TV receiver
PAUSE/STILL button
Hi-Fi level indicators
Channel display
Recording level controls
Counter/Remaining Time Display
Tape run indicator
NR indicator
SP indicator
EP indicator
COUNTER/REMAINING button
REMAIN SELECT switch
POWER
TIMER
VHS
EJECT
INSERT
AUDIO DUB
STOP
PLAY
REC
PAUSE/STILL
SEARCH
CLOCK
COUNT
CH
INSTANT REC
TAPE RUN
CHANNEL
UP
DOWN
PUSH OPEN

**1** Switch ON.
- Adjust the TV receiver's channel to your video channel (3 or 4).

**2** Press POWER.

**3** Load a cassette.

**4** Set to either SP or EP.
SP ( ▬ ): 2 hours 40 minutes with a T-160 cassette.
EP ( ▁ ): 8 hours with a T-160 cassette.

**5** Press VIDEO/TV to engage the VIDEO mode (the indicator lights).

**6** Set to TV.

**7** Select the channel you wish to record. (Make sure that the BAND button on the glide-out control panel is set correctly.)

**8** **Hi-Fi audio recording level adjustment**
For automatic level control, press the AUDIO LIMITER button to ON ( ▁ ). For manual level control, leave the button in the OFF position and slide the Hi-Fi REC LEVEL controls referring to the Hi-Fi level indicators. Optimum recording level is obtained when the LEDs light up to 0 or 1 dB with the loudest input signal.

**9** Set to ON if you want to apply noise reduction to normal audio.

**10** Press REC and PLAY simultaneously to start recording.

**11** Press STOP at the end of the program.

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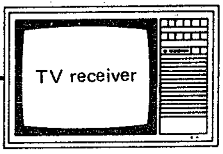
**Notes**

- If there is part of the program you don't want to record, press the PAUSE/STILL button. To release the Pause mode, press the PLAY button.
- When recording is restarted from the Pause mode, assemble recording is performed so that the playback picture will not distort at the edit point. A few frames recorded before the pause are erased due to overlap of the new recording. This is not due to any defect of the unit.
- When the Pause mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- The built-in tuner's automatic channel lock mechanism prevents the selected channel from being altered during recording. Therefore, if you wish to change the channel during recording, first engage the Pause mode and then select a different channel. However, if the BAND button is pressed during recording to switch channel modes, the channel is changed to the last channel selected in the other mode (TV or CATV).
- Sound from microphone(s) connected to the MIC jack(s) can be mixed with the TV sound being recorded.
- If the REC button cannot be engaged, check to see if the cassette safety tab has been removed. (See page 3.)
- When the end of the tape is reached during recording, the tape is automatically rewound to the beginning and stops.
- Press the COUNTER/REMAINING button to check how much recording time is left. (For more details refer to page 21.)

# RECORDING A TV PROGRAM WHILE WATCHING ANOTHER

A program not being viewed can be recorded while you enjoy viewing another program.
This permits the recorded program to be played back later at your convenience.

**1** Switch ON.
- Adjust the TV receiver's channel to the one you wish to view.


TV receiver

**2** Press POWER.

**3** Load a cassette.

**4** Set to either SP or EP.
SP ( ▬ ): 2 hours 40 minutes with a T-160 cassette.
EP ( ▬ ): 8 hours with a T-160 cassette.

**5** Make sure that the VIDEO indicator is not lit. If lit, press the VIDEO/TV button so that it extinguishes.

**6** Set to TV.

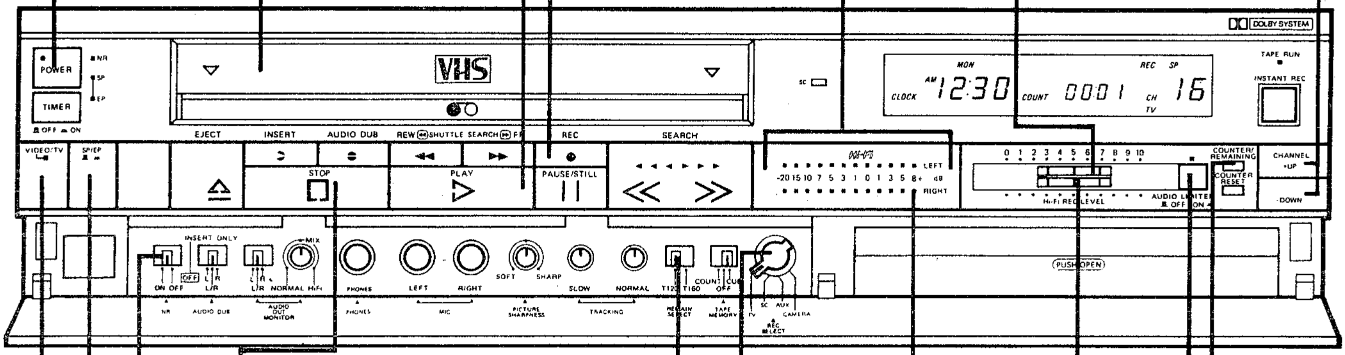
**7** Select the channel you wish to record.

**8** **Hi-Fi audio recording level adjustment**
For automatic level control, press the AUDIO LIMITER button to ON ( ▬ ).
For manual level control, leave the button in the OFF position and slide the Hi-Fi REC LEVEL controls referring to the Hi-Fi level indicators.
Optimum recording level is obtained when the LEDs light up to 0 or 1 dB with the loudest input signal.

**9** Set to ON if you want to apply noise reduction to normal audio.

**10** Press REC and PLAY simultaneously to start recording.

**11** Press STOP at the end of the program.


Hi-Fi level indicators
Recording level controls
COUNTER/REMAINING button
T160/T120 select switch
POWER
TIMER
VHS
EJECT
INSERT
AUDIO DUB
REC
SEARCH
STOP
PLAY
PAUSE/STILL
CLOCK 12:30
COUNT 0001
CH 16
INSTANT REC
CHANNEL UP
DOWN
VIDEO/TV
SP/EP
PUSH OPEN

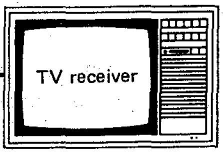
---

**Notes**
The recording procedures are exactly the same as when recording a TV program while watching it.
- Select the channel you wish to record with the recorder's channel buttons.
- Select the channel you wish to view with the TV receiver's channel selector.
- The VIDEO/TV button should be in the TV position with the indicator not lit.

# RECORDING FM SIMULCAST TV PROGRAMS

FM simulcast TV programs can be recorded using an FM stereo tuner. Connect necessary components as illustrated on page 14. Select the TV channel which is broadcasting the simulcast program with the HR-D725U's CHANNEL buttons and tune the FM stereo tuner to the station which is broadcasting the sound for this TV program.

**1** Switch ON.
- Adjust the TV receiver's channel to your video channel (3 or 4).


TV receiver

**2** Press POWER.

**3** Load a cassette.

**4** Set to either SP or EP.
SP ( ■ ): 2 hours 40 minutes with a T-160 cassette.
EP ( ‒ ): 8 hours with a T-160 cassette.

**5** Press VIDEO/TV to engage the VIDEO mode (the indicator lights).

**6** Set to SC.
The SC indicator will light.

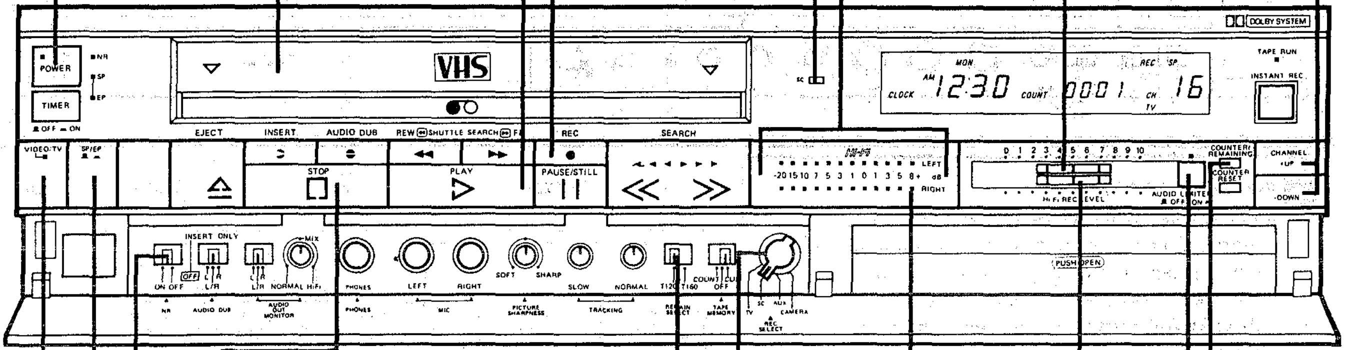
**7** Select the channel you wish to record.

**8** **Hi-Fi audio recording level adjustment**
For automatic level control, press the AUDIO LIMITER button to ON ( ‒ ).
For manual level control, leave the button in the OFF position and slide the Hi-Fi REC LEVEL controls referring to the Hi-Fi level indicators.
Optimum recording level is obtained when the LEDs light up to 0 or 1 dB with the loudest input signal.

**9** Set to ON if you want to apply noise reduction to normal audio.

**10** Press REC and PLAY simultaneously to start recording.

**11** Press STOP at the end of the program.


SC indicator
Hi-Fi level indicators
Recording level controls
COUNTER/REMAINING button
T160/T120 select switch
POWER
TIMER
NR
SP
EP
OFF ‒ ON
VHS
EJECT
INSERT
AUDIO DUB
REW SHUTTLE SEARCH FF
REC
SEARCH
VIDEO·TV
SP/EP
STOP
PLAY
PAUSE/STILL
DOLBY SYSTEM
CLOCK 12:30
COUNT 0001
CH 16
TV
REC SP
TAPE RUN
INSTANT REC
Hi-Fi
LEFT
RIGHT
dB
Hi-Fi REC LEVEL
AUDIO LIMITER
COUNTER/REMAINING
COUNTER RESET
CHANNEL
UP
DOWN
INSERT ONLY
MIX
ON OFF
L/R
NORMAL Hi-Fi
AUDIO DUB
AUDIO OUT MONITOR
PHONES
MIC
SOFT SHARP
PICTURE SHARPNESS
SLOW NORMAL
TRACKING
REC SELECT
TAPE MEMORY
TV AUX CAMERA
PUSH OPEN

---

**Notes**

- Connect an FM stereo receiver to the rear panel AUDIO LINE IN connectors.
- Set the REC SELECT switch to SC. Then the video signal and normal audio signal will be recorded from the built-in tuner and the hi-fi audio signal will be recorded from the FM stereo receiver.
- The SC position also permits you to record any FM broadcast on the hi-fi audio track while recording any TV program. A variety of enjoyable effects is possible with the resulting tape by using the AUDIO OUT MONITOR (audio mixing volume) control to vary the sound.
- If you wish to record only FM broadcasts on video tape, set the REC SELECT switch to AUX. Recording will be made on both hi-fi and longitudinal audio tracks. (In this case, nothing should be connected to the VIDEO IN connector.)
- After finishing recording, be sure to set the REC SELECT switch to TV.
- When recording both video and audio signals (hi-fi and normal) from the built-in tuner, make certain that the REC SELECT switch is set to TV.

## AUTOMATIC TIMER RECORDING

The built-in 14-day/8-event programmable timer permits recording of preset channels on preset days, at preset times for preset lengths while you are away.

**18** Press TIMER to ON.
- The TIMER indicator will light together with the numbers of the programmed memories.

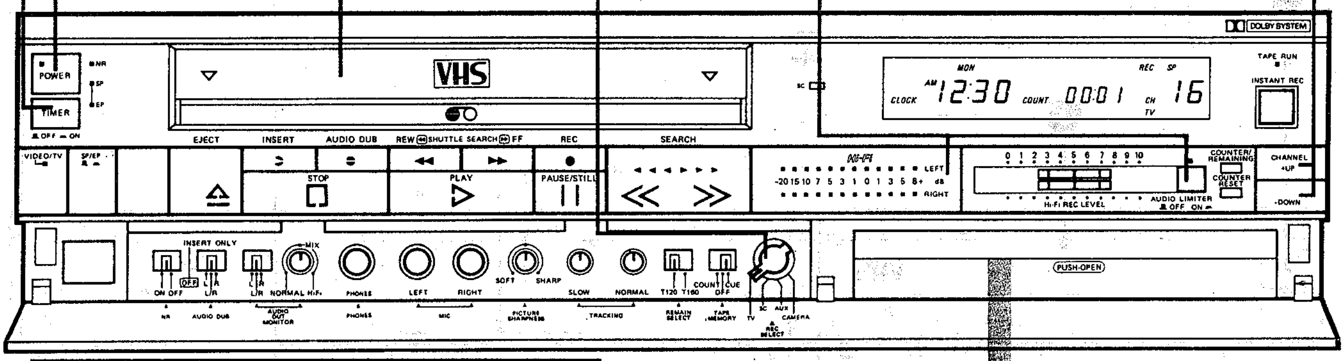
**1** Press POWER.

**2** Load a cassette.

**3** Set to TV.

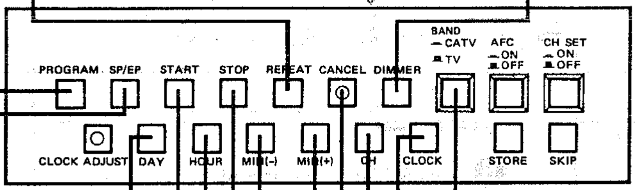
**4** Press AUDIO LIMITER to ON.
(For timer recording, it is recommended that the AUDIO LIMITER button be engaged.)

**16** Press CHANNEL "+UP" or "-DOWN" to obtain desired channel indication.

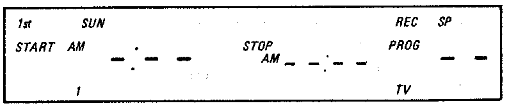

POWER
TIMER
OFF ON
VHS
EJECT
INSERT
AUDIO DUB
REW SHUTTLE SEARCH FF
REC
SEARCH
STOP
PLAY
PAUSE/STILL
VIDEO/TV
SP/EP
DOLBY SYSTEM
TAPE RUN
INSTANT REC
MON
REC SP
CLOCK AM 12:30 COUNT 0001 CH 16 TV
Hi-Fi
LEFT
RIGHT
Hi-Fi REC LEVEL
AUDIO LIMITER OFF ON
COUNTER/REMAINING
COUNTER RESET
CHANNEL +UP -DOWN
PUSH-OPEN
INSERT ONLY
MIX
ON OFF
L/R
NORMAL Hi-Fi
PHONES
LEFT
RIGHT
SOFT SHARP
SLOW NORMAL
T120 T160
COUNT CUE OFF
NR
AUDIO DUB
AUDIO OUT MONITOR
MIC
PICTURE SHARPNESS
TRACKING
REMAIN SELECT
TAPE MEMORY
SC AUX
TV CAMERA
REC SELECT

REPEAT button

DIMMER button


PROGRAM
SP/EP
START
STOP
REPEAT
CANCEL
DIMMER
BAND
CATV
TV
AFC
ON
OFF
CH SET
ON
OFF
CLOCK ADJUST
DAY
HOUR
MIN(-)
MIN(+)
CH
CLOCK
STORE
SKIP

**5** Press PROGRAM.
- The display will change to the Timer Set mode. You are ready to enter the data into No. 1 program memory. If you want to change the program number, press the PROGRAM button a required number of times.


1st
SUN
REC SP
START AM -:--
STOP AM --:--
PROG --
1
TV

**11** Press STOP for switch-off time setting.
- The STOP indicator will flash.

**9** Press HOUR to obtain desired "hour" indication.

**12** Press HOUR to obtain desired "hour" indication.

**7** Press START for day and switch-on time setting.
- The START indicator will flash.

**8** Press DAY to obtain desired "day" indication.

**6** Select the mode of recording.
SP: 2 hours 40 minutes with a T-160.
EP: 8 hours with a T-160.
The REC SP or REC EP indicator will light correspondingly.

**15** Select the type of broadcast.

| | |
|---|---|
| TV | : off-air programs |
| CATV | : cable programs |

**17** Press CLOCK to change the display to the Clock mode.
- If no command is entered within about 60 seconds, all displays will be restored automatically.

**14** Press CH for setting the channel from which you want to record.
- The PROG indicator will flash.

CANCEL button

**10** Press MIN (+) or MIN (-) to obtain desired "minute" indication.

**13** Press MIN (+) or MIN (-) to obtain desired "minute" indication.

# IMPORTANT INFORMATION ON TIMER RECORDING

**Setting the START and STOP times**

- It is not possible to set the START and STOP times unless the clock time has previously been set.
- Enter the data while the START or STOP indicator is flashing (about 60 seconds).
- Holding the DAY, HOUR, MIN (+) and MIN (-) buttons pressed for more than 1 second continuously advances the indication automatically. Pressing the buttons once advances the indication in single increments only.
- The sequence of day indications: from "1st SUN" (first Sunday) to "1st SAT" (first Saturday), then "2nd SUN" to "2nd SAT", and then an everyday indication.
- After setting the START time, when the STOP button is pressed, initial STOP time indication will be the same as the start time.
- Unless the START time has been properly set, STOP time setting is not possible.
- The STOP time can be set within 24 hours from the START time. If the hour setting for the STOP time runs into the following day, there is no need to set the day (the DAY button does not function when the STOP time mode is engaged). Recording will stop at the preset time on the following day, even though the day indication is not displayed.

**Setting the channel**

- Enter the data while the PROG indicator is flashing (about 60 seconds).
- Setting the channel is independent from the START or STOP button. Therefore, it is possible to select the channel either before or after setting the START and STOP times.
- In the Program Set mode, pressing the BAND button only changes the indication from TV to CATV or from CATV to TV. If you specify a non-existent cable TV channel in the CATV mode, the CATV indicator continues blinking. If this should occur, correct the channel number.
- The currently tuned channel locks in the Program Set mode and, when the display returns to the Clock mode, the locked channel is displayed.

**Setting the recording mode**

- The recording mode (SP or EP) can be specified for each preset program using the SP/EP button on the timer setting section. The setting of the regular SP/EP button on the front panel has no effect on timer recording.

**Repeating the programmed data**

- When you want to record a daily serial for one week, just obtain the everyday indication when setting the day.
- If you wish to hold the preset data in memory in order for recordings to be made repeatedly according to the same data (for example, at the same time on the same day every week), press the REPEAT button. The REPEAT indicator will light.
- The combination of the everyday indication and REPEAT indication means that recording will be repeated every day indefinitely.

**Cancelling the preset data**

- The preset programs can be cancelled by pressing the CANCEL button. For this purpose, first engage the Program Set mode for the number you wish to cancel and then press the CANCEL button.
- The PROGRAM and CANCEL buttons cannot be pressed simultaneously.

**Checking the programmed data**

- Checking and re-programming can be performed anytime as long as the POWER button is in the ON position (even when the TIMER button has already been engaged in the ON position).
- While recording is actually taking place, the switch-off time can be changed. If the START button is pressed, the switch-on time is displayed, but the START indicator does not flash, indicating that changing of the switch-on time is not possible.
- While recording is actually taking place according to one preset program, all other preset programs can be checked or re-programmed.

**TIMER indicator**

- When the TIMER button is pressed to ON with a cassette loaded and the timer correctly programmed, the TIMER indicator on the display will light with the corresponding preset program number(s) also lighting and the power is turned off.
- When you have preset several programs at a time, confirm that all the preset program numbers light together with the TIMER indicator when the TIMER button is pressed. The program whose number does not light has not been correctly preset (for instance, the preset switch-on and switch-off times are the same, or no switch-off time has been entered). Recheck the programmed data.
- If all programs have been wrongly preset, the TIMER indicator will flash for about 10 seconds when the TIMER button is pressed, and then remains lit with no program number lighting.
- If the TIMER button is pressed when a cassette is not loaded, the TIMER indicator will continue blinking.
- If a cassette with its safety tab removed has been loaded, it will be ejected automatically when the TIMER button is pressed. The TIMER indicator will continue blinking.

**Timer operation**

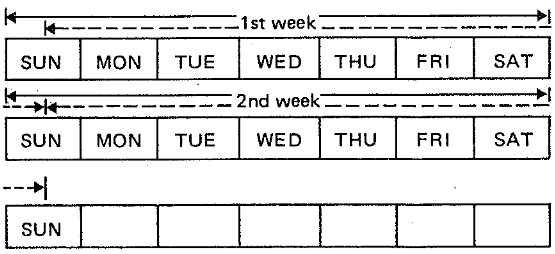
- Tape loading starts 10 seconds before the preset switch-on time and the recording start signal is triggered 2 seconds before the preset time so that recording starts exactly at the preset time.
- During timer recording, the number of the program that is presently operating will be flashing.
- After timer recording, the power is switched off and the auto rewind mechanism does not function. If the end of the tape is reached during timer recording, the cassette is automatically ejected and then the power is switched off.
- If a power failure should occur (and last longer than about 10 minutes), not only time-keeping stops (see page 18), but also all the preset data will be cancelled. A flashing SUN AM 12:00 indicates this after power has been reapplied. In such cases, first correct the time indication and then re-enter the programming data.

## FOR A BETTER UNDERSTANDING OF THE PROGRAMMABLE TIMER

### Two-week timer

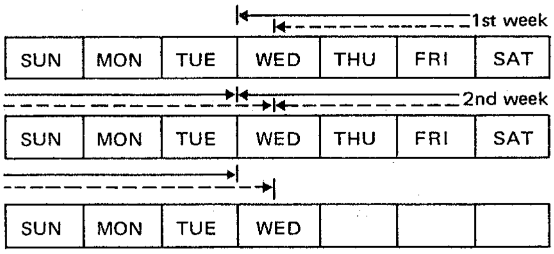
"Two-week" presetting capacity means that you can "reserve" recordings on any one of 14 days in advance including the day of setting.

If the current day of setting is Sunday:



- In this situation, there may be no possibility of confusion in setting the day.
- Namely, the "1st MON" is Monday of the current week and the "2nd MON" is Monday of the next week. The same applies to other week days.
- Regarding Sunday, there are two different cases; one is that you are going to set the timer to a time before the current time of setting and the other is that the preset time is a time after the current time of setting.
- In the former case, the "1st SUN" is the next Sunday and the "2nd SUN" is the Sunday after next.
- In the latter case, the "1st SUN" is the current Sunday and the "2nd SUN" is Sunday of the next week.

If the current day of setting is Wednesday for example:



- Remember that the "1st MON", "1st TUE" and so on . . . mean the first coming Monday, the first coming Tuesday, and so on, and not Monday of the current week.
- Similarly, the "2nd MON", "2nd TUE" and so on . . . are the second coming Monday, the second coming Tuesday, and so on, and not Monday or Tuesday of the next week.
- If you are on Wednesday for example, and wish to record something on Tuesday of the next week, the preset data should be "1st TUE". To record on Thursday of the next week, set "2nd THU".
- Regarding Wednesday, the same as mentioned about Sunday on the left applies.

---

### 8-program timer

"8-program" presetting capacity means that you can have 8 separate program entries which contain different programming data. Because of this capacity, you can even "reserve" 8 different TV programs, either on the same day or on different days.

Each program (No. 1 through No. 8) entry contains information on "TV channel number", "day", "start time", "stop time", "SP or EP" and "either single or repeat".

Example of the contents of one program entry:

| Program number | TV channel number | Day | Start time | Stop time | Rec mode | Repeat |
|---|---|---|---|---|---|---|
| 2 | 12 | 1st WED | PM 10:30 | PM 11:30 | EP | – |

### Variety of setting possibilities

- You can set for some day of the 1st week or the 2nd week.
- You can set for one day of every week by first setting that day of the 1st week and pressing the REPEAT button.
- You can set for one day of every week starting from the second week by first setting that day of the 2nd week and pressing the REPEAT button.
- You can set for all days. For this setting, obtain the indication "SUN MON TUE WED THU FRI SAT", and recordings will be repeated at the same time everyday for one week.
- You can set for all days week after week. For this setting, first obtain the indication as mentioned above and then press the REPEAT button. And recordings will be made everyday at the same time week after week.
- All the above applies for all 8 program entries.

### Program priority

- If you have preset two programs for the same day and the same start time, the setting corresponding to the smaller program number has priority.
- If two programs have preset times which overlap, the earlier-started program will be interrupted by the latter one.

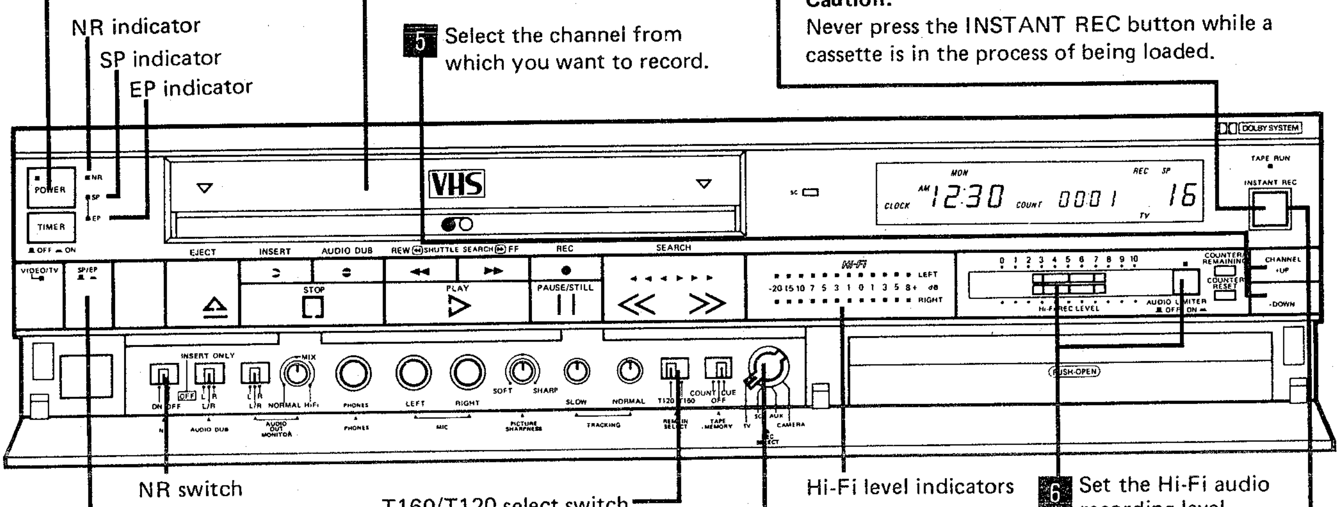
# INSTANT RECORDING

Besides starting and stopping a recording as usual, the HR-D725U offers a more convenient possibility: starting by the push of a single button, and recording will stop automatically after a certain period of time. Use this facility for starting a recording just before you go to bed or leave home.

**1** Press POWER.

**2** Load a cassette.

**5** Select the channel from which you want to record.



**6** Set the Hi-Fi audio recording level.

**3** Set to TV.

**4** Set to either SP or EP.

**7** Press INSTANT REC.

- The following indication will appear on the display, to show that the recorder is ready to start recording.
- The REC STOP indicator on the display will flash.

**Caution:**
Never press the INSTANT REC button while a cassette is in the process of being loaded.

**8** Press INSTANT REC once again.

- Recording will begin immediately and the following indication will appear on the display, showing that recording will automatically stop and power will switch off after 30 minutes.
- The REC STOP indicator remains lit.

REC STOP
0:30

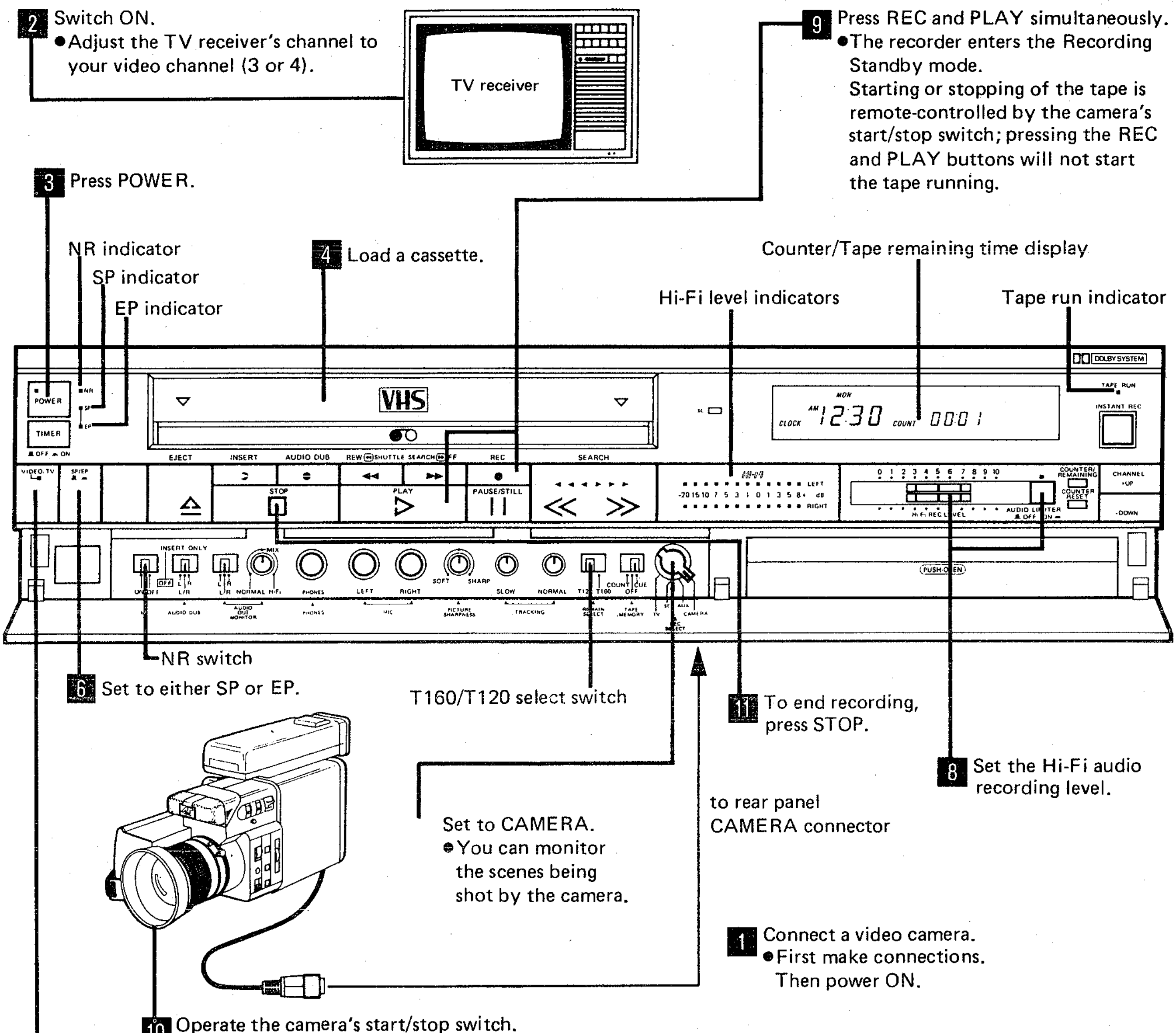
**9** Each time the INSTANT REC button is pressed, recording time increases by 30 minutes.

- For a more precise time setting, use the HOUR, MIN (+) and MIN (-) buttons to set to the exact time required.

**Notes:**

- If the INSTANT REC button is not pressed a second time within about 10 seconds after it has been pressed once, the Instant Record mode will be cancelled and the display will change back to the Counter mode.
- Timer setting in the Instant Record mode is possible up to a maximum of 4 hours when the INSTANT REC button only is used. If the MIN (+) button is used after 4:00, this setting can be increased up to 4 hours, 59 minutes.
  If 4:59 is to be obtained, simply press the MIN (-) button once.
- While recording is in progress, the displayed time counts down; when 0:00 is reached, the Record mode is released after 10 seconds. The power will be switched off.
- If you want to stop recording after having started recording in the Instant Record mode, press the STOP button or press the POWER button to OFF.
- The instant recording function can also be used as a sleep timer. If you press the INSTANT REC button during normal recording, the REC STOP indicator will light on the display and the indication "0:30" will be obtained, showing that recording will stop automatically after 30 minutes. The time span can be adjusted in the same way as for instant recording up to 4 hours, 59 minutes.
- Instant recording has priority over all other modes; you can start recording from any mode using the INSTANT REC button, even from rewind or fast forward.
- If the INSTANT REC button is pressed with a non-recordable cassette loaded (one with its safety tab removed), the cassette will be automatically ejected.
- If you want to perform instant recording after you have set the timer and pressed the TIMER button to ON, press the INSTANT REC button as usual. Power will be turned on and instant recording will start. After instant recording has been performed, the Timer mode is automatically re-entered and power is turned off. The preset time for instant recording has priority over the programmed preset times. Before pressing the INSTANT REC button, make sure that the instant recording time will not eventually overlap the programmed preset times.
- If the programmed switch-on time for a timer recording should come after the switch-off time of the instant recording, this timer recording will still be made automatically.

# RECORDING WITH A VIDEO CAMERA



**1** Connect a video camera.
- First make connections. Then power ON.

**2** Switch ON.
- Adjust the TV receiver's channel to your video channel (3 or 4).

**3** Press POWER.

**4** Load a cassette.

Set to CAMERA.
- You can monitor the scenes being shot by the camera.

**6** Set to either SP or EP.

**7** Press VIDEO/TV to engage the VIDEO mode (the indicator lights).

**8** Set the Hi-Fi audio recording level.

**9** Press REC and PLAY simultaneously.
- The recorder enters the Recording Standby mode. Starting or stopping of the tape is remote-controlled by the camera's start/stop switch; pressing the REC and PLAY buttons will not start the tape running.

**10** Operate the camera's start/stop switch.
- Now recording will start.

**11** To end recording, press STOP.

For satisfactory results, use the JVC GZ-S5U, GZ-S3U or GX-S9U camera.

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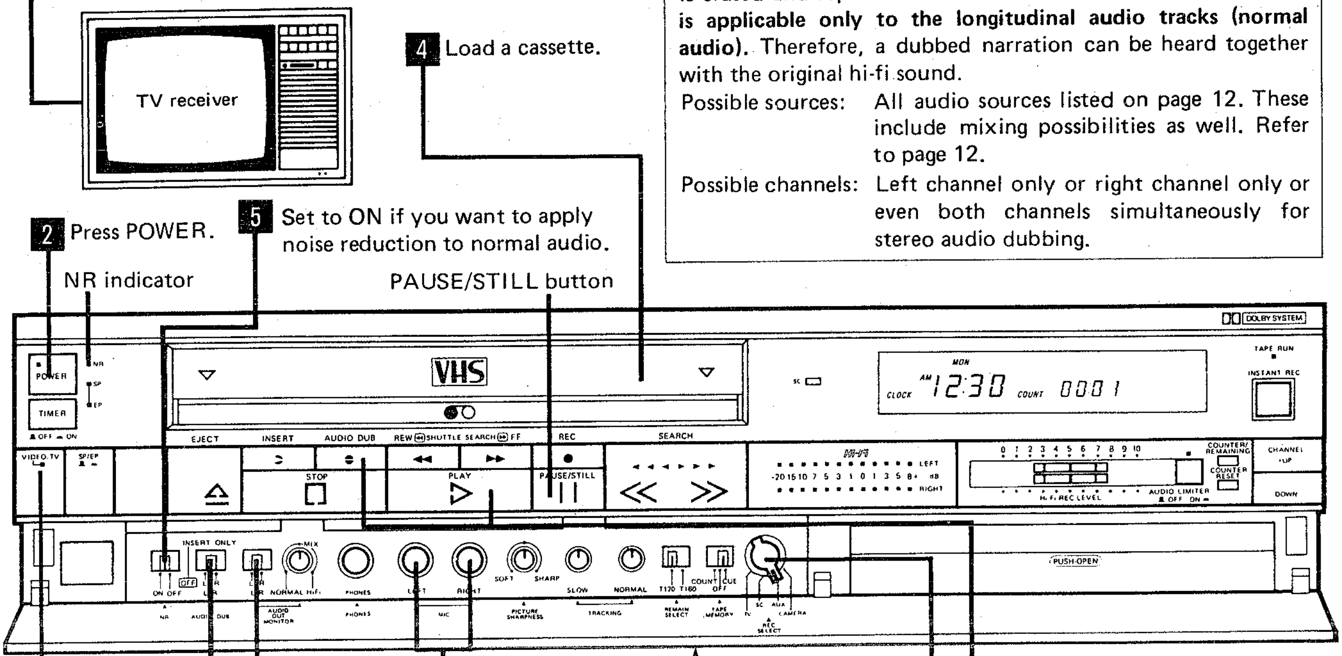
**Notes**

- For various sound recording possibilities while recording with a camera, refer to the chart on page 12.
- If microphone(s) are connected to the HR-D725U's MIC jacks, this microphone input is recorded mixed with the camera's built-in microphone.
- If feedback noise (whistling or howling) is heard from the TV receiver, reduce the volume or move the microphone, either external or built within the camera, farther away from the TV receiver.
- Power to the camera is switched on or off with the power switch or by using the built-in timer.
- With some cameras, their battery warning indicator may flicker, however, no problem occurs with recording as long as the picture being monitored on the TV screen appears normal.
- Some cameras may be connected to the rear panel VIDEO IN and AUDIO LINE IN connectors via an appropriate adapter. In such cases, set the REC SELECT switch to AUX instead of CAMERA. The start/stop switch on the camera cannot control taping on/off in this connection.
- For camera operation refer to the instruction manual for the relevant camera.

# AUDIO DUBBING

Audio dubbing means recording a new soundtrack on a pre-recorded tape. In other words, the previously recorded sound is erased and replaced with a new soundtrack. **Audio dubbing is applicable only to the longitudinal audio tracks (normal audio).** Therefore, a dubbed narration can be heard together with the original hi-fi sound.

| | |
|---|---|
| Possible sources: | All audio sources listed on page 12. These include mixing possibilities as well. Refer to page 12. |
| Possible channels: | Left channel only or right channel only or even both channels simultaneously for stereo audio dubbing. |



**1** Switch ON.
- Adjust the TV receiver's channel to your video channel (3 or 4).

**2** Press POWER.

**3** Press VIDEO/TV to engage the VIDEO mode (the indicator lights).

**4** Load a cassette.

**5** Set to ON if you want to apply noise reduction to normal audio.

**6** Connect microphones or audio sources to the MIC jacks or the AUDIO LINE IN connectors respectively.

**7** Set to AUX.
- If you record sound only from the microphone(s), the source equipment connected to the AUDIO LINE IN connectors should be OFF.

**8** Set AUDIO DUB as required.

| | |
|---|---|
| L: | to replace the left-channel sound only while retaining the right-channel sound. |
| L/R: | to replace sound on both channels with a stereo recording. |
| R: | to replace the right-channel sound only while retaining the left-channel sound. |

**9** Press AUDIO DUB and PLAY simultaneously.
- The AUDIO DUB and PLAY indicators will light and audio dubbing will start.

**10** Set AUDIO OUT MONITOR switch as required.
- Monitor only the sound being dubbed or that sound together with the original sound that is to be retained.
- The selected channel can be heard via headphones as well.
- It is advisable to set the AUDIO OUT MONITOR (audio mixing volume) control to NORMAL.

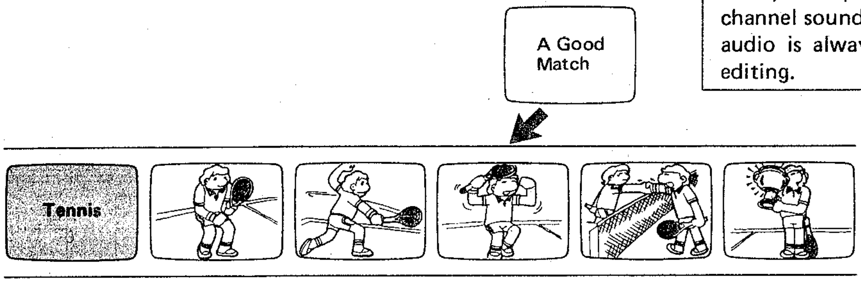
**Notes**
- Use a high-impedance microphone.
- If whistling or howling is heard during audio dubbing, reduce the TV volume or move the microphone(s) farther away from the TV. Recording is being performed even if sound is not heard from the TV receiver. If you want to monitor the sound being recorded, connect headphones to the PHONES jack.
- The pause function facilitates audio dubbing. First play back the pre-recorded tape and press the PAUSE/STILL button at the point from which you wish to start audio dubbing. If necessary, adjust the point accurately by pressing the PAUSE/STILL button a few more times. Then press the AUDIO DUB and PLAY buttons simultaneously. This permits you to start audio dubbing exactly at the right point.

# INSERT EDITING

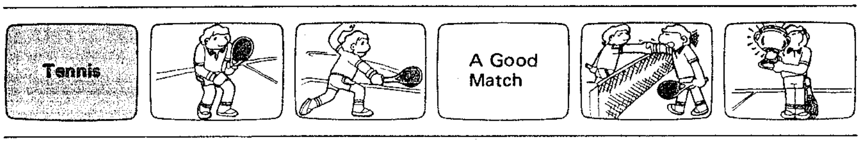
Insert editing means recording a new scene into a section of pre-recorded tape so that a part of the original recording can be replaced with a new sequence without excessive picture distortion at edit-in and edit-out points. New video and audio signals to be inserted can come either from a video camera or another video cassette recorder, or even from the built-in tuner.

**CAUTION**

Since video and audio signals are recorded simultaneously, **both hi-fi and normal audio soundtracks are replaced with new recordings simultaneously.** However, if the AUDIO DUB switch is set to L (OFF), the normal audio soundtrack will not be replaced. If you wish to preserve the original soundtrack, set this switch to L (OFF – INSERT ONLY). Normally set this switch to L/R and, for special purposes, set it to R to replace the right-channel sound only of the normal audio soundtrack. Hi-fi audio is always replaced together with video by insert editing.


A Good Match
Tennis

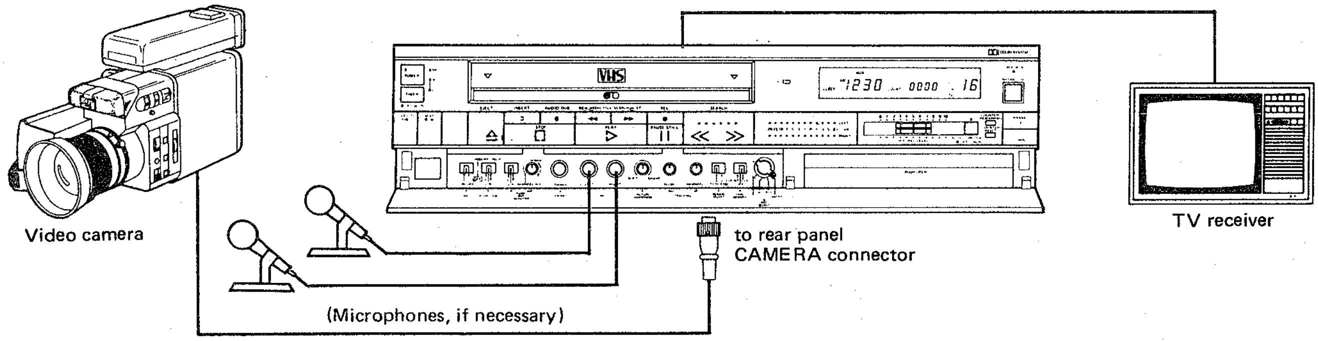
Original tape


Tennis
A Good Match

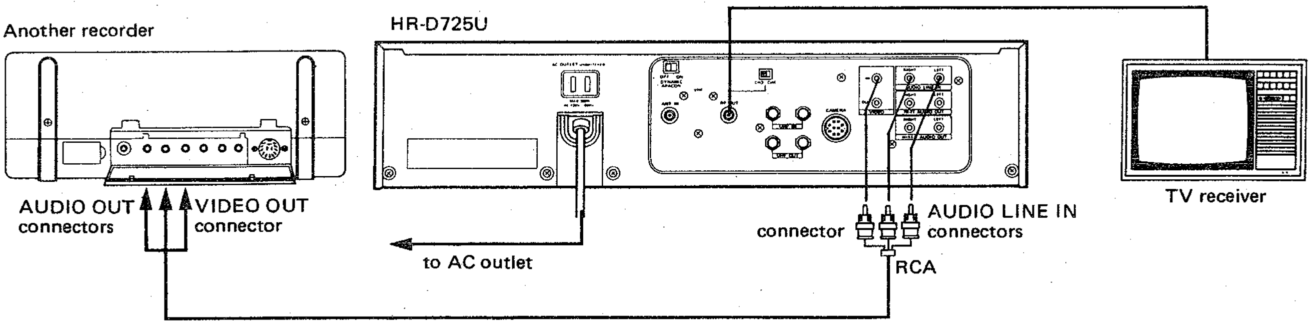
Edited tape

## Connections

For inserting video and audio signals from a camera connected to the rear panel CAMERA connector.

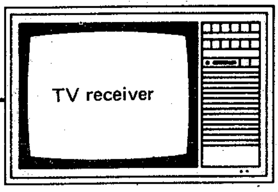

Video camera
to rear panel
CAMERA connector
(Microphones, if necessary)
TV receiver

For inserting video and audio signals from another video cassette recorder.


Another recorder
HR-D725U
AUDIO OUT
connectors
VIDEO OUT
connector
to AC outlet
connector
AUDIO LINE IN
connectors
RCA
TV receiver

## Procedure

**1** Switch ON.
- ●Adjust the TV receiver's channel to your video channel (3 or 4).


TV receiver

**9** Press PAUSE/STILL at the edit-out point.

**12** Press PAUSE/STILL at the edit-in point.

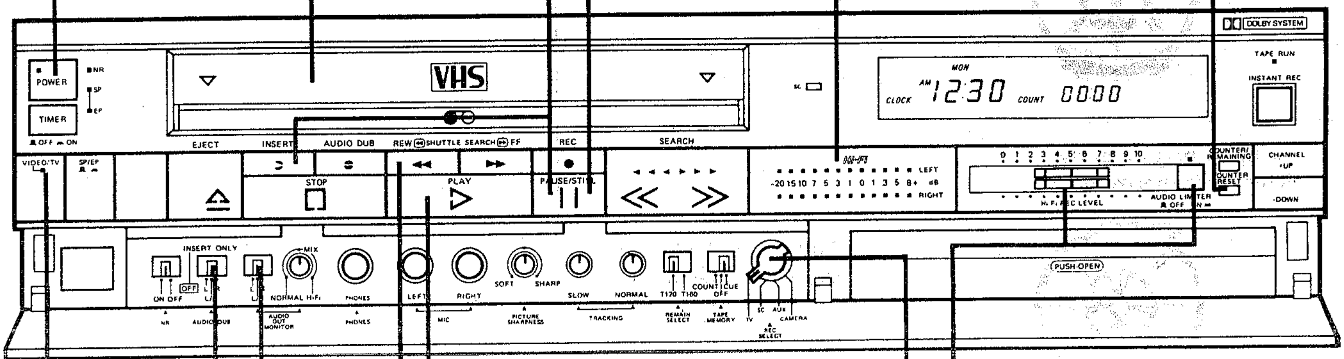
**13** Press INSERT and PAUSE/STILL simultaneously.
- ●This engages the Insert Standby mode in which the input signal can be monitored on the TV screen; the still picture changes into the input signal that you are going to record.
- ●The input sound signal can also be monitored.

**10** Press COUNTER RESET.
- ●The tape counter will be reset to "0000".

**2** Press POWER.

**3** Load a pre-recorded cassette.

Hi-Fi level indicators


DOLBY SYSTEM
POWER
TIMER
VHS
CLOCK 12:30
COUNT 0000
TAPE RUN
INSTANT REC
EJECT
INSERT
AUDIO DUB
REW SHUTTLE SEARCH FF
REC
SEARCH
STOP
PLAY
PAUSE/STILL
Hi-Fi
LEFT
RIGHT
CHANNEL UP
DOWN
VIDEO/TV
SP/EP
INSERT ONLY
MIX
NORMAL Hi-Fi
PHONES
SOFT SHARP
SLOW NORMAL
T120 T160
COUNT CUE
PUSH OPEN
AUDIO DUB
AUDIO OUT MONITOR
MIC
PICTURE SHARPNESS
TRACKING
REMAIN SELECT
TAPE MEMORY
TV SC AUX CAMERA
REC SELECT

**6** Set the Hi-Fi audio recording level.

AUDIO OUT MONITOR switch.

**8** Play back the tape to determine the edit-out point (the end of the tape section to be replaced).

**5** Set REC SELECT as required.

| | |
|---|---|
| AUX: | To insert programs from a different tape. |
| CAMERA: | To insert camera signals from a camera connected to the CAMERA connector. |
| TV: | To insert TV programs from the built-in tuner. |
| SC: | To insert FM simulcast programs. |

**7** Set AUDIO DUB as required. (See CAUTION on previous page.)

**15** Press PLAY to start insert editing.
- ●Now video and audio signals will be recorded simultaneously.
- ●At the counter reading of "0000", recording will stop automatically.
- ●The tape will continue running in the Play mode.

**4** Press VIDEO/TV to engage the VIDEO mode (the indicator lights).

**14** Operate the source equipment properly.
- ●Play back on another recorder the tape program to be inserted.
- ●Operate the camera so that it is in the locked running mode.
- ●Select the channel to be recorded.
- ●Select the channel and set the FM tuner.

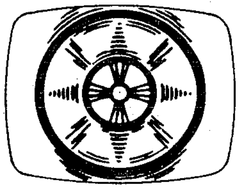
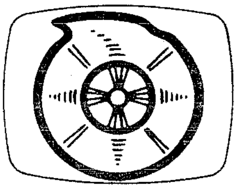
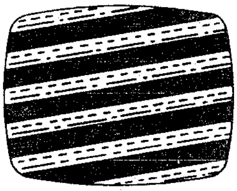
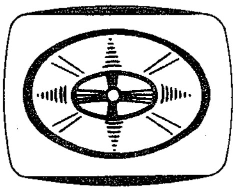
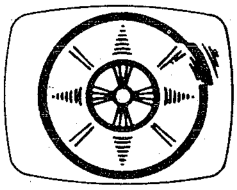
**11** Press REW/SHUTTLE SEARCH to determine the edit-in point (the beginning of the tape section to be replaced).

**Notes**

- Do not use the STOP button to stop insert editing. If you press the STOP button, the tape stops and the Insert Edit mode is cancelled.
- If you wish to stop insert editing before the specified edit-out point is reached, press the COUNTER RESET button. Then the Play mode will be entered.
- The insert editing mechanism used in the HR-D725U has been developed for home use applications. It may happen that pictures slightly distort or colors are incorrect at the edit points. This is not due to any defect of the unit.
- The recording mode is automatically determined by the previous recording on which the new segment is inserted regardless of the setting of the SP/EP switch.
- If the edit start point of the new scene lies in the SP mode and the edit end point of the same scene lies in the EP mode or vice versa, the inserted picture will distort at the switching point in the recording mode.

## ADJUST YOUR TV RECEIVER WHEN . . .

Still, slow and fast-motion playback may require adjusting your TV receiver. If your TV shows the following symptoms during playback in these modes, adjust the TV receiver first.

| Symptom | Adjustment |
|---|---|
| Picture vibrates vertically.<br> | Turn the V-Hold knob slightly for stabilizing. |
| The upper portion of the picture drifts horizontally.<br> | Turn the H-Hold knob slightly for stabilizing.* |
| Picture rolls.<br> | Turn the H-Hold knob slightly for stabilizing. |
| Picture is flattened vertically.<br> | Inherent in your TV receiver. |
| Only a portion of the picture continues to flicker.<br> | Not adjustable.<br>Inherent in your TV receiver. |

## HEAD CLEANING

- Picture playback may become blurred or interrupted while the TV program received is clear. This does not mean that the recorded program has been erased.
- Dirt accumulated on the head after long periods of use causes such troubles. In this case, head cleaning requiring highly technical care is necessary.

* For head cleaning, consult the nearest JVC dealer.

If the V-Hold and H-Hold knobs are not provided on your TV receiver, please consult your JVC dealer.

* If an unsatisfactory result is obtained, it is necessary to adjust the AFC circuit of the TV receiver.

# IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

## POWER AND TAPE TRANSPORT PROBLEMS

| Symptoms | Check points |
|---|---|
| No power is applied to the recorder. | • Is the power cord disconnected?<br>– Connect it. |
| Clock is functioning properly, but the recorder cannot be powered. | • Is the TIMER button pressed to ON?<br>– Press it to OFF. |
| Tape does not run during recording. | • Is the PAUSE/STILL button pressed to ON?<br>– Press the PLAY button. |
| Tape stops in the Rewind or Fast Forward mode. | • Is the TAPE MEMORY switch set to either COUNT or CUE?<br>– Set it to OFF. |
| Tape will not rewind or fast forward. | • Is the tape already fully rewound or fast forwarded?<br>– Check the cassette. |

## RECORDING PROBLEMS

| Symptoms | Check points |
|---|---|
| Recording cannot be started. | • Is a cassette loaded?<br>• Is the safety tab on the cassette removed?<br>– Reseal the slot with cellophane tape. |
| TV broadcasts cannot be recorded. | • Is the REC SELECT switch set to AUX or CAMERA?<br>– Set it to TV. |
| Camera recording is not possible. | • Is the camera correctly connected to the CAMERA connector?<br>• Is the REC SELECT switch set to a position other than CAMERA?<br>– Set it to CAMERA. |
| Simulcast recording is not possible. | • Is the REC SELECT switch set to a position other than SC?<br>– Set it to SC.<br>• Is an audio source correctly connected to the AUDIO LINE IN connectors?<br>– Check connections. |
| Timer recording is not possible. | • Have you set the clock correctly and programmed the timer correctly?<br>– Check once again.<br>• Is the TIMER button pressed to OFF?<br>– Press it to ON. |
| Audio dubbing is not possible. | • Is the safety tab on the cassette removed?<br>– Reseal the slot with cellophane tape. |

## PLAYBACK PROBLEMS

| Symptoms | Check points |
|---|---|
| Playback picture does not appear while the tape is running. | • Is the TV receiver's channel selector set to the correct video channel?<br>– Set it to channel 3 or 4. |
| Noise appears on the search and still pictures. | • This is normal. |
| Noise appears during normal or slow-motion playback. | • Adjust the TRACKING controls. |
| Playback picture is blurred or interrupted while TV broadcasts are clear. | • Video heads may be dirty.<br>– Head cleaning is necessary. Consult your nearest JVC dealer. |
| Playback sound is different from that intended to be recorded. | • Is a microphone plugged in?<br>– Unplug it. |
| Normal audio soundtrack is not available from the connected audio equipment. | • Is the audio equipment connected to the HI-FI AUDIO OUT connectors?<br>– Connect it to the MIXED AUDIO OUT connectors. |

## HI-FI AUDIO PROBLEMS

| Symptoms | Check points |
|---|---|
| TV sound cannot be recorded on hi-fi audio tracks. | • Is the REC SELECT switch set to SC?<br>– Set it to TV. |
| Breaks are noticeable in hi-fi audio reproduction. | • Adjust with the NORMAL TRACKING control. |
| Soundtrack on hi-fi audio tracks cannot be reproduced. | • Is the AUDIO OUT MONITOR control fully turned to NORMAL?<br>– Turn it toward HI-FI until the desired hi-fi audio level is obtained. |
| Hi-Fi level indicators do not function. | • Is the AUDIO LIMITER button pressed to ON?<br>– Press it to OFF. |

## OTHERS

| Symptoms | Check points |
|---|---|
| Whistling or howling is heard from TV. | • Move camera or microphone away from TV or reduce TV sound volume. |
| Clock setting is not possible. | • Press the POWER button to ON. (The TIMER button should be OFF.) |
| Some channels are skipped over when selecting a channel. | • Those channels are preset to be skipped over. If you need them, restore them. |
| Channel cannot be switched. | • Is recording in progress?<br>– During recording, you cannot change the channel. |
| Snowy picture on screen when viewing TV programs while recording another program. | • Is the VIDEO indicator lit?<br>– Press the VIDEO/TV button so that the indicator extinguishes. |

# SPECIFICATIONS

Format : Hi-Fi VHS standard

Recording system : Rotary, slant azimuth two-head helical scan system with two pairs of video heads, one pair exclusively for the SP mode and one pair for the EP mode.

Hi-Fi audio recording system : Deep-layer recording system conforming to stereo Hi-Fi VHS standard

No. of audio tracks : 2 Hi-Fi audio tracks
2 normal audio tracks

Video signal system : NTSC-type color signal

Tape width : 12.65 mm (1/2 inch)

Tape speed
(SP) : 33.35 mm/s (1-5/16 ips)
(EP) : 11.12 mm/s (7/16 ips)

Maximum recording time
(SP) : 160 min. with T-160 video cassette
(EP) : 480 min. with T-160 video cassette

Temperature
Operating : 5°C to 40°C (41°F to 104°F)
Storage : -20°C to 60°C (-4°F to 140°F)

Antenna
(VHF) : 75 ohms, unbalanced
(UHF) : 300 ohms, balanced

Channel coverage
(VHF) : Channels 2 – 13
(UHF) : Channels 14 – 83
(CATV) : 57 channels (mid, super and hyper)

VHF output signal : Channel 3 or 4 (switchable; preset to channel 3 when shipped)
75 ohms, unbalanced

Power requirement : AC 120 V∿, 60 Hz

Power consumption : 40 W (50 W with camera)

**Video**
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio : More than 45 dB (Rohde & Schwarz noise meter) with PICTURE SHARPNESS control at center position
Horizontal resolution : 240 lines with PICTURE SHARPNESS control at center position

**Audio**
Input : Mic: -67 dBs, high impedance, unbalanced
Line: -8 dBs, 50 k-ohms, unbalanced
Output level : -6 dBs, high impedance load
Output impedance : Less than 1 k-ohm, unbalanced
Signal-to-noise ratio : More than 46 dB (Dolby NR on)
Frequency range : 70 Hz to 10,000 Hz

**Hi-Fi audio**
Frequency response : 20 Hz – 20,000 Hz
Dynamic range : More than 80 dB
Wow and flutter : Less than 0.005 % WRMS
Channel separation : More than 60 dB

Timer : 14-day programmable timer (8 programs) with repeat function

Dimensions : 435 mm(W) x 105 mm(H) x 379 mm (D)
(17-3/16" x 4-3/16" x 14-15/16")

Weight : 9.4 kg (20.8 lbs)

Provided accessories : Antenna cable (F-type), Cassette tape, Matching transformer, Infrared remote control RM-P72U, "AA"-size battery x 2, Audio cable

*Specifications shown are for SP mode unless otherwise specified.*
*Design and specifications subject to change without notice.*

# HR-D725U "NONSENSE" CALLS

Power Supply

| Complaint | Checkpoints |
|---|---|
| 1. Power does not switch on. | • Is TIMER button depressed? |

Operating Error

| Complaint | Checkpoints |
|---|---|
| 1. Hi-Fi level meters do not light. | • These do not light when the AUDIO LIMITER switch is ON. This is normal. |
| 2. During Search operation the variable-speed SEARCH marks does not light. | • This is normal. |
| 3. Variable-speed SEARCH indicator remains lighted when SHUTTLE SEARCH FF (or REW) button is pressed. | • This is normal. |
| 4. Pressing the COUNTER RESET button does not reset the tape remaining indication. | • This is normal. The button resets only the counter indication. |
| 5. Tape remaining indicator sometimes inaccurate. | • REMAIN SELECT switch (T120/T160) correctly positioned? |
| 6. Tape becomes ejected during timer recording. | • Tape erase prevention tab (safety tab) broken off? The built-in computer detects absence and initiates eject operation.<br>This feature serves to protect important recordings or costly pre-programmed tapes from accidental erasure. |
| 7. Tape becomes ejected when INSTANT REC button is pressed. | Same as above. |
| 8. Tape becomes ejected when INSERT and PAUSE buttons pressed simultaneously. | • Same as above. |
| 9. Eject inoperative. | • Eject is not performed during recording even if the EJECT button is pressed. First press STOP, then EJECT. |
| 10. Stop is sometimes produced during FF or Rewind. | • CUE position selected? The cue signal cannot be detected in the picture during playback. |
| 11. Sound not recorded during Insert. | • With AUDIO DUB channel select switch set correctly? Refer to operating instructions and perform settings carefully. |
| 12. Audio Dub inoperative. | AUDIO DUB channel select switch set correctly? Refer to operating insturctions. |

Video

| Complaint | Checkpoints |
|---|---|
| 1. Picture blurred or noisy. | • PICTURE SHARPNESS control set completely in one direction or the other? |
| 2. PICTURE SHARPNESS control has no effect during recording (but functions during playback). | • If rear panel DYAC (dynamic aperture control) switch is set to OFF, effect is not produced during recording. |
| 3. Vertical jitter during Slow and Still playback. | • Adjust R411 (A/S/M board V. LOCK, accessible from bottom) to eliminate picture jitter. |

## Audio

| Complaint | Checkpoints |
|---|---|
| 1. Both Hi-Fi and Normal audio absent. | •REC SELECT switch set to SC? Set switch to TV. Sound is not obtained during Search X1 mode. |
| 2. Playback sound skips occasionally (particularly in EP mode). | •Squelch function operates in event of tape dropout, causing brief sound loss. Machine is normal (but check tape quality if severe). |
| 3. Hi-Fi sound absent of noisy (picture normal). | •Adjust NORMAL TRACKING control. Muting becomes applied if tracking is out of adjustment. At this time, the Normal audio output is obtained. Also check that tape itself contains Hi-Fi mode audio. |
| 4. Noise produced when AUDIO OUT MONITOR control is set to NORMAL. | •Set control to Hi-Fi. If the noise ceases, machine is not defective. |
| 5. Sound level varies and distorts. | •AUDIO OUT MONITOR control set to MIX? Set control to either Hi-Fi or NORMAL. If problem ceases, machine is not defective. |
| 6. Hi-Fi sound quality poor. High frequencies distorted. | •Quality of source (e.g., TV broadcast) itself poor? Try recording a "live" program (which tends to possess better sound quality) and compare. Some types of programs, particularly animations, may possess noisy or distorted sound, although picture quality might be acceptable. |
| 7. Dolby circuit does not operate in Hi-Fi mode. | •The Dolby NR circuit functions only for Normal mode audio. |
| 8. Headphone sound too loud. | •Set the Headphone output level select switch located on the bottom to the L (Low output) position (A/S/M board). |
| 9. FM audio not recorded; Normal audio is OK. | •AUDIO LIMITER switch set to OFF and Hi-Fi REC LEVEL set to 0? |
| 10. Hi-Fi sound OK in SP (standard) mode but absent or noisy in EP (extended) mode. | •Interchangeability specifications are less strict for the EP mode. Carefully adjust the TRACKING control for optimum sound quality. |
| 11. R channel Hi-Fi audio level indicator deflects, but normal mode R channel sound absent or low level. | •Audio Level indicators indicate Hi-Fi but not Normal mode sound. If Normal mode R channel is absent or low, check for bending at upper edge of tape. |

## Noise

| Complaint | Checkpoints |
|---|---|
| 1. Thick noise bar in Search mode (1 to 2 cm on 14" CRT). | •Dirt particle adhering to video head. Perform head cleaning. |
| 2. Noise in picture during Slow playback. | •Adjust SLOW TRACKING control. |
| 3. Noisy playback of tape that was recorded with another VHS machine. | •Noise may occur when the HR-D725U plays back the cue signal recorded by other machine. This is normal. |

## Timer

| Complaint | Checkpoints |
|---|---|
| 1. Only part of a program recorded in timer recording. | •EP-SP selection incorrect in timer recording setting? |
| 2. Large error in timer operation. | •Commercial power interruption? The back-up function provides a 10 minute margin. Power outages exceeding this will result in faulty timer operation. |
| 3. Beginning portion of tape not recorded in timer recording. | •Commercial power interruption? This effect can occur with a short outage that exceeds the 10 minute back-up time. |

# SECTION 1
# GENERAL DESCRIPTION

## 1.1 INTRODUCTION

Development of consumer type video tape recorders initially concentrated on bringing the cost of such equipment to within the range accessible to ordinary consumers, while at the same time maintaining sufficient picture quality to render the systems desirable to the average person. Of these efforts, the VHS format has proven to be the most successful, both in technical respects and in terms of consumer popularity.

However, many owners and prospective owners of video cassette recorders also possess respectable quality audio high fidelity systems. Consequently, the demand has been growing for enhancing the sound quality of video cassette recorders to a level equivalent to stereo audio components.

One of the earliest proposed methods for accomplishing this has also proven to be the most effective, i.e.: include "flying" audio heads along with the video heads on the rotating head drum. In principle, this takes advantage of the high relative speed between heads and tape, thereby extending the audio frequency response to the range that can justly be called "high fidelity".

The adopted method, however, was not without its technical challenges. Foremost among these are 1) inserting extended range audio information along with the already extremely dense video information, 2) avoiding mutual interference between the audio and video signals, and 3) maintaining compatibility with the existing VHS format.

The VHS Hi-Fi System has been developed by taking these main factors into consideration. As a result, a series of high performance audio-visual (A/V) products is being produced for reaching an important, but very demanding, section of the market.

## 1.2 DEPTH MULTIPLEX (D-MPX) RECORDING

This method allows the recording of two different (audio and video) signals on the same magnetic tape track. On the rotating head drum, the audio heads are mounted at positions prior to the video heads. These record the audio information on the magnetic tape at nearly saturation level. Afterwards, the video heads record the picture information over the audio data, partially erasing the audio signal (but leaving ample remaining level to allow normal playback).

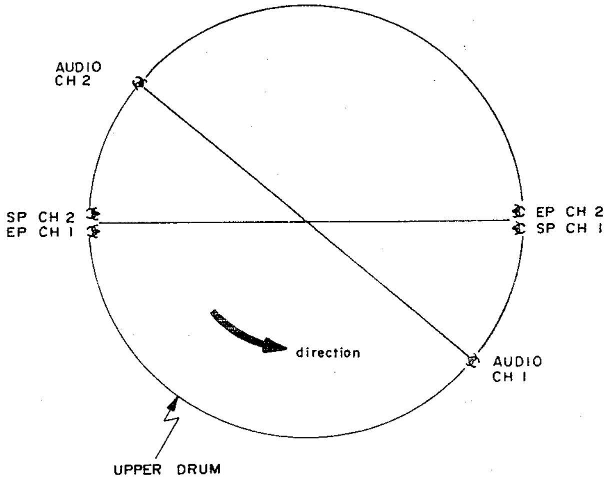


Fig. 1-1

Since the audio signal is frequency modulated (FM) prior to recording, the resulting reduction in level (approximately 12 dB) does not significantly affect playback sound quality.

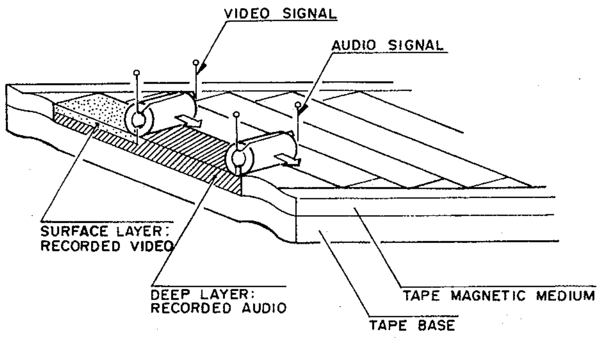


Fig. 1-2

## 1.3 AZIMUTH DIFFERENCE

Due to the physical principles affecting magnetic heads and tape, normal playback level is achieved when the azimuth angles of the recording and playback heads precisely coincide. As the difference between these angles increases, the playback level drops sharply.

This property forms the basis of the azimuth recording system. The azimuth angle difference between video channels is ±6°, while that between the audio channels is ±30°. Consequently, each audio and video head yields an effective output only when it traces the signal corresponding to its own particular azimuth angle.

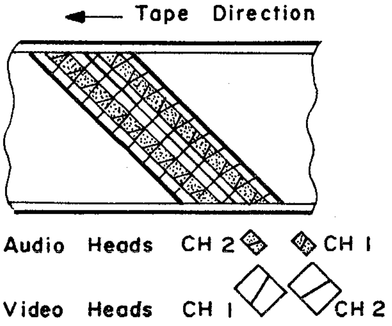


Fig. 1-3

## 1.4 FREQUENCY SPECTRUM

As can be noted from Fig. 1-4(A), the VHS format signal spectrum is formed by separating the luminance (Y) and chrominance ("chroma" or C) components of the color video signal, then converting the chroma signal to a lower frequency range (i.e., down converted chrominance). This process leaves a relatively open spectral slot between 1 MHz and 2 MHz.

The audio channel signals are frequency modulated at carrier frequencies of 1.3 MHz and 1.7 MHz, resulting in the VHS Hi-Fi frequency spectrum illustrated in Fig. 1-4(B).

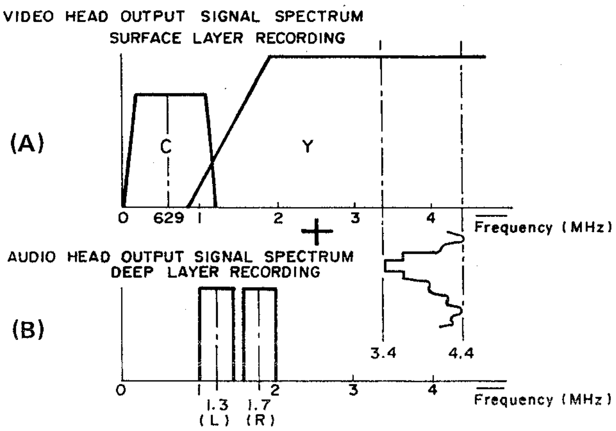


Fig. 1-4

## 1.5 MAINTAINING VHS FORMAT COMPATIBILITY

This is achieved by retaining the fixed audio head used in previously marketed VHS equipment. As a result, there are actually three audio tracks: two "flying" and one longitudinal.

Therefore, video programs recorded by the VHS Hi-Fi machines can be played back on conventional VHS format machines, and vice versa (of course, in both cases, the extended audio performance is not reproduced).

## 1.6 BLOCK DIAGRAM OUTLINE

As the block diagram of Fig. 1-6 indicates, considerable engineering effort has been devoted to maximizing signal to noise ratio (S/N). For reducing tape hiss noise and improving dynamic range, a newly developed peak detector type noise reduction circuit is employed. In this compression-expansion ("compander") system, the dynamic range of the input audio signal is compressed prior to recording. Upon playback, the signal is expanded to return to its original dynamic range.

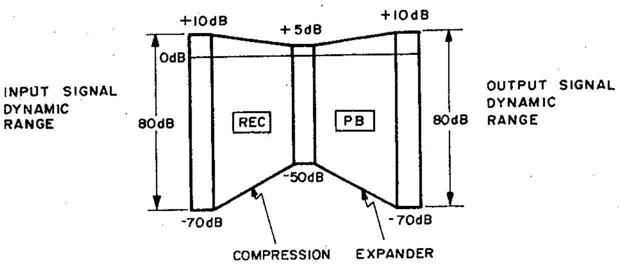

+10dB
+5dB
+10dB
0dB
INPUT SIGNAL DYNAMIC RANGE
80dB
REC
PB
80dB
OUTPUT SIGNAL DYNAMIC RANGE
-50dB
-70dB
-70dB
COMPRESSION
EXPANDER

Fig. 1-5

Since the audio signal is frequency modulated, modulation noise becomes introduced. A pre-emphasis circuit therefore enhances the high frequencies prior to modulation, while a limiter serves to avoid overmodulation. Following modulation, a lowpass filter (LPF) functions to attenuate high frequency noise.

During playback, the FM signals from the audio heads are joined into continuous signals by reference to the drum flipflop pulse. Bandpass filters (BPF) separate the left and right channel FM carriers, which are applied to their respective demodulators and dropout compensators.

Each signal then goes through a lowpass filter to a de-emphasis circuit, which reverses the enhancement applied during recording. Finally, the expander portion of the noise reduction system reverses the compression used in recording to yield the playback output.

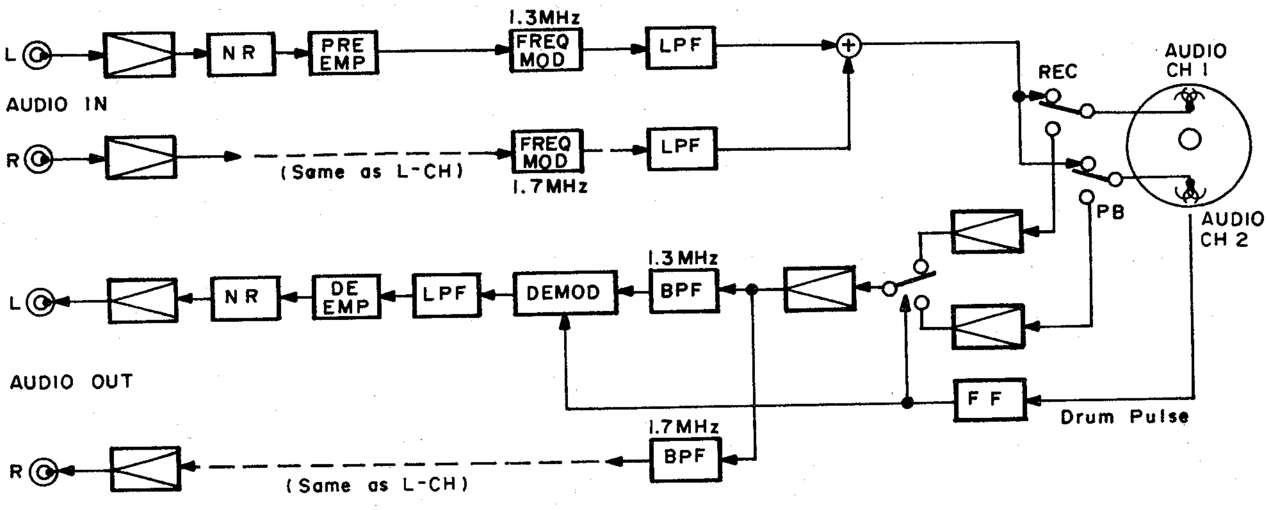

L
AUDIO IN
R
NR
PRE EMP
1.3MHz
FREQ MOD
LPF
(Same as L-CH)
FREQ MOD
1.7MHz
LPF
REC
AUDIO CH 1
PB
AUDIO CH 2
L
NR
DE EMP
LPF
DEMOD
1.3MHz
BPF
AUDIO OUT
F F
Drum Pulse
1.7MHz
BPF
R
(Same as L-CH)

Fig. 1-6

# SECTION 2
# MECHANICAL ADJUSTMENTS

## 2.1 GENERAL

### 2.1.1 Precautions

- IMPORTANT

1. Disconnect from power before removing or soldering components.
2. The tape transport mechanism has been precisely adjusted at the factory and ordinarily does not require re-adjustment.
3. Tighten the screws carefully to avoid damage to the chassis.

Test equipment required :

Color television or monitor
Oscilloscope : wide-band, dual trace, triggered, delayed sweep
Recording tape
Alignment tapes

### 2.1.2 Required jigs and tools

For proper mechanical adjustment, the following jigs and tools are strongly recommended. Without them, a long trial-and-error period would be necessary, resulting in possible damage. In addition, general-purpose tools and a metric hex key (obtain locally) are required.

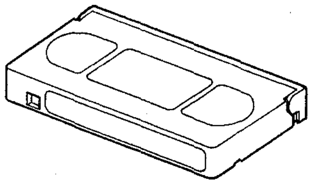
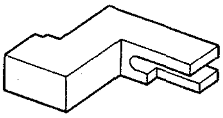
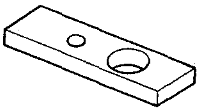
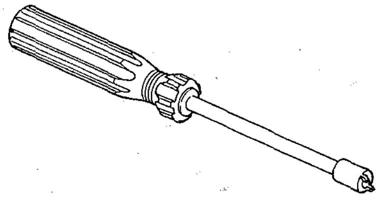
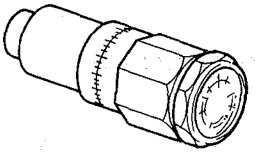
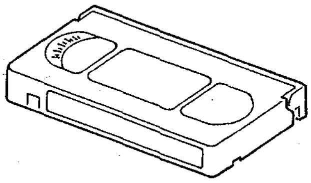
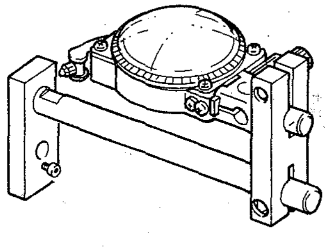
| | | |
|---|---|---|
| JVC alignment tape MH-1/MH-1L/MH-7<br> | Height gauge PUJ44904-2<br> | Spacer PUJ44905<br>(for micro-checker)<br> |
| Tapered nut driver PUJ50637<br> | Torque gauge ass'y PUJ48075-2<br>(Torque meter : 600ATG<br>Torque gauge head : PUJ48016-2)<br> | Back tension cassette gauge PUJ48076<br> |
| Micro-checker PUJ49712-2<br> | | |

Table 2-1 Jigs and tools

### 2.1.3 Disassembly

1. Top cover and bottom plate

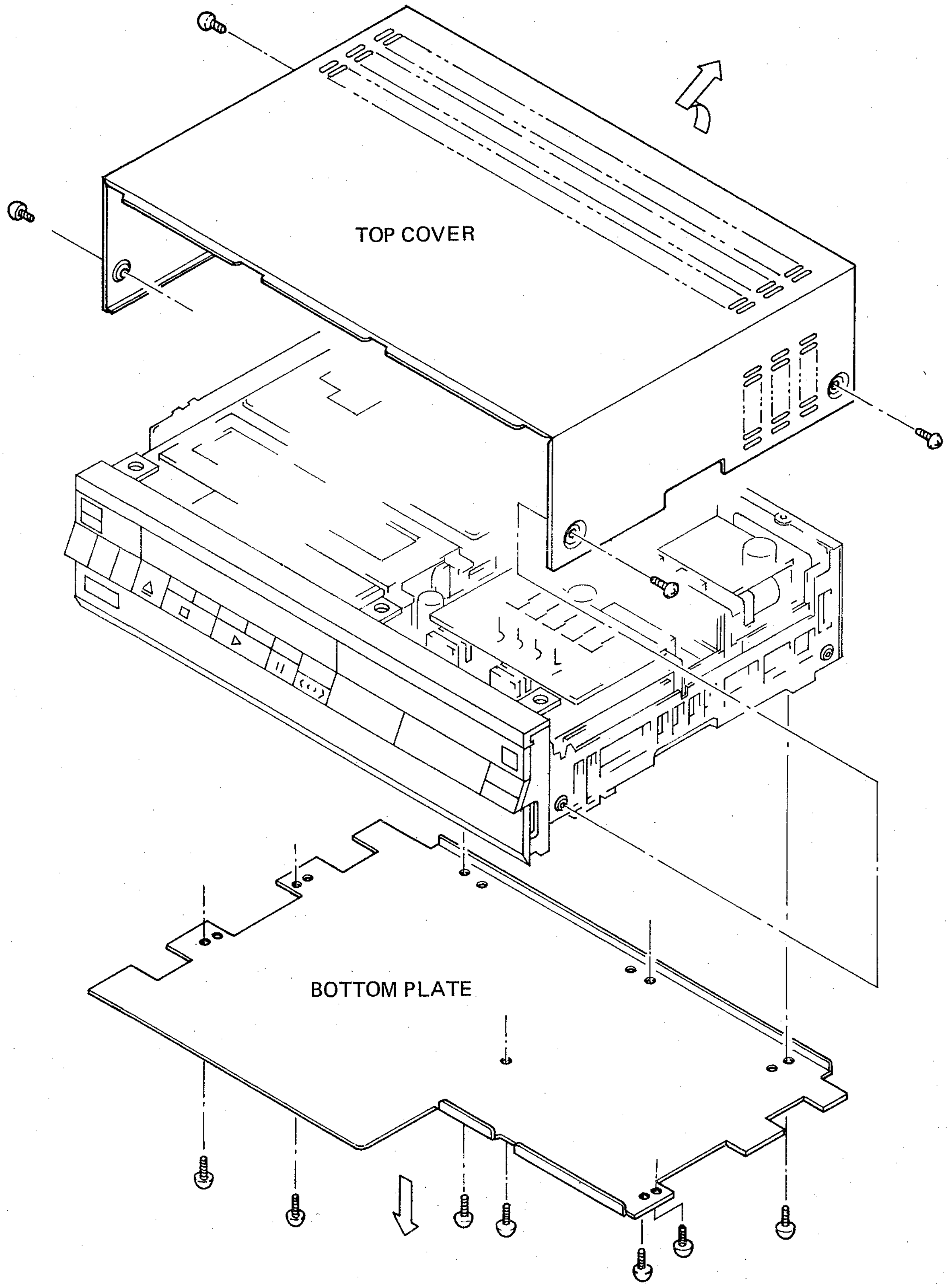

TOP COVER
BOTTOM PLATE

**Fig. 2-1** Top cover/bottom plate

2. Front panel and rear panel

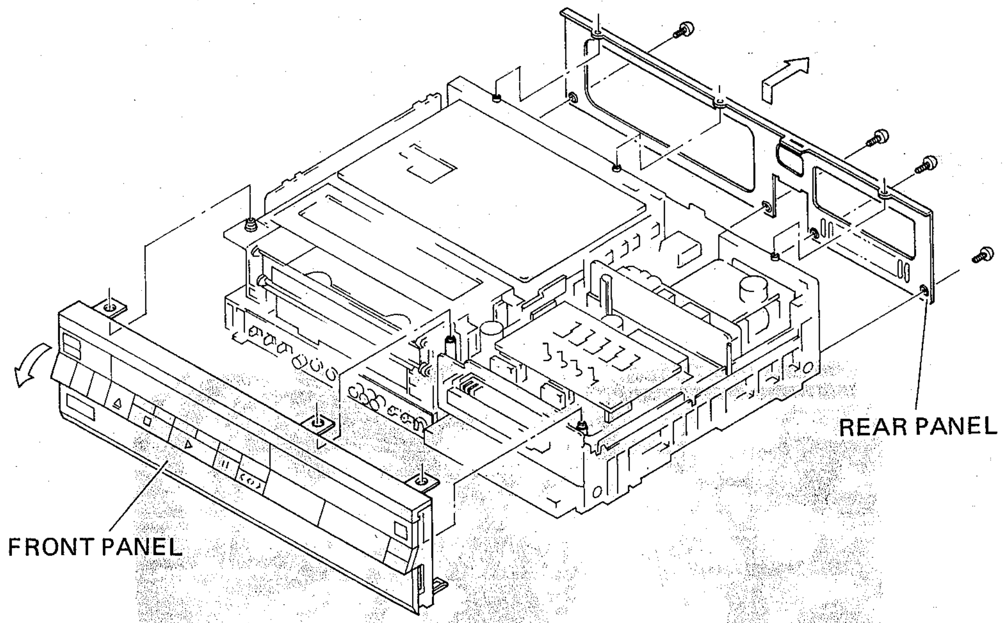

REAR PANEL
FRONT PANEL

**Fig. 2-2** Front panel/rear panel

3. Cassette doors

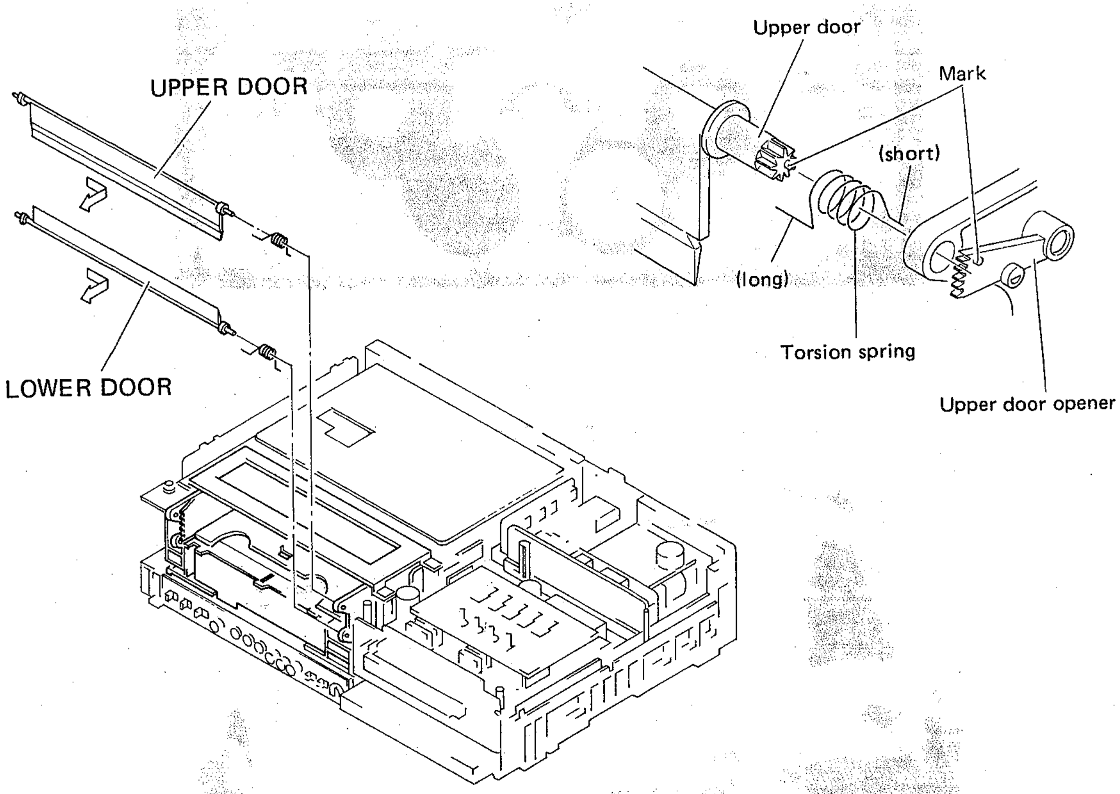

UPPER DOOR
LOWER DOOR
Upper door
Mark
(short)
(long)
Torsion spring
Upper door opener

**Fig. 2-3** Cassette doors

**Notes:**

When reassembling the doors, proceed as follows:

1) Locate the mark on the gear portion of the upper door.
2) Set the long straight part of the torsion spring toward the upper door.
3) Install the upper door so that the mark noted in Step 1) is aligned with the mark on the upper door opener of the cassette housing.

## 2.2 PERIODIC MAINTENANCE

The following procedures are recommended for maintaining optimum performance and reliability of this video cassette recorder.

### 2.2.1 Layout of maintenance parts

1. Top view

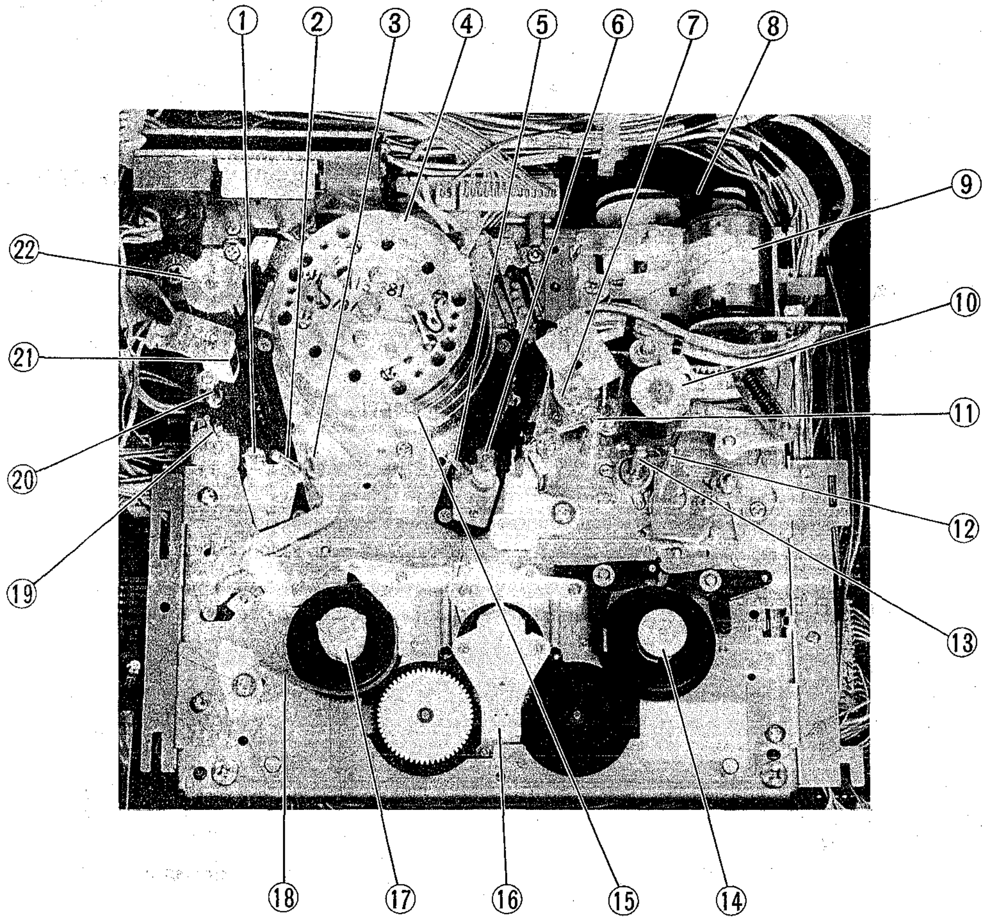

①
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**Fig. 2-4** Top view

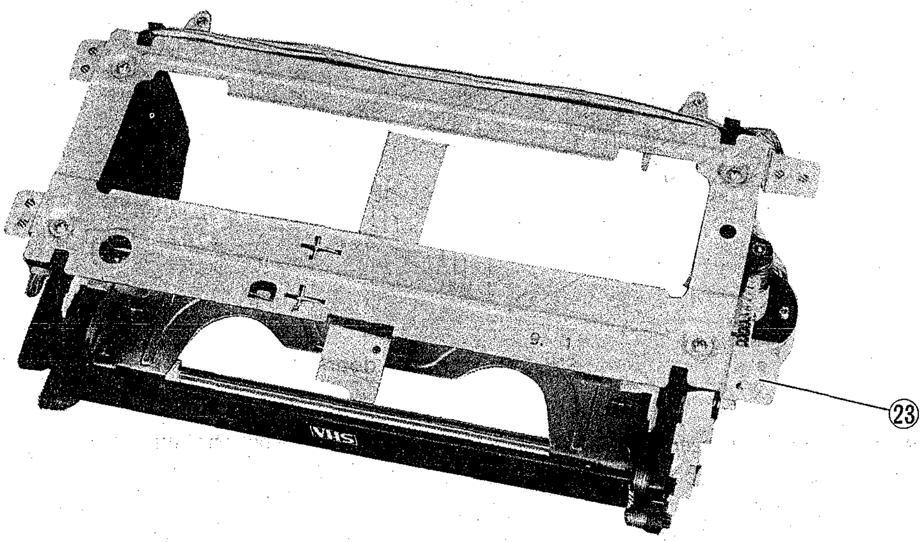


**Fig. 2-5** Cassette housing

## 2. Bottom view

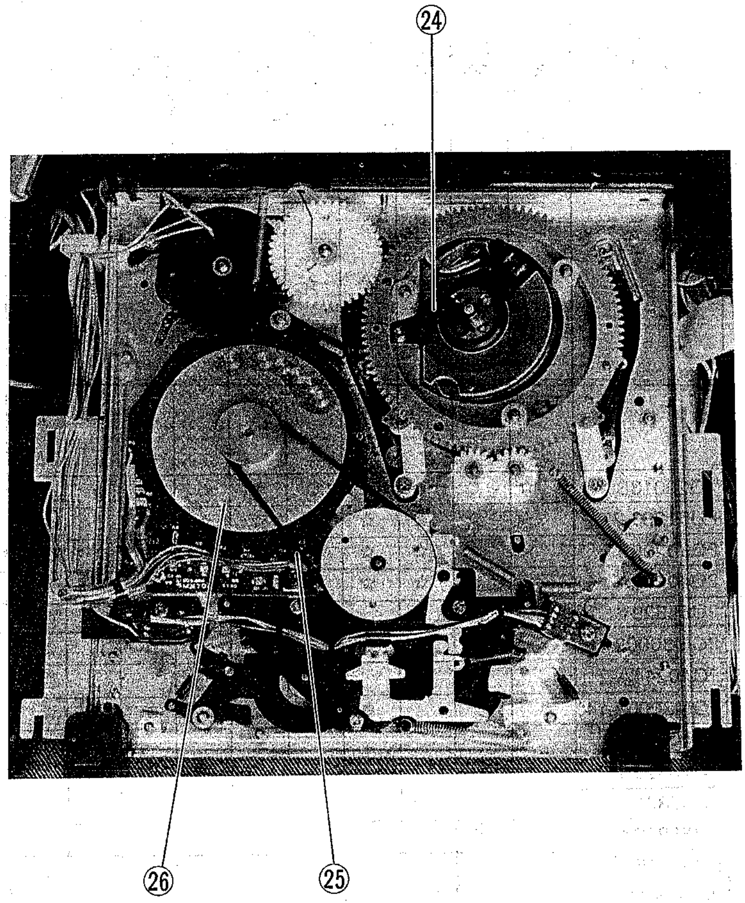


**Fig. 2-6** Bottom view

1 SUP guide roller
2 SUP slant pole
3 Tension pole
4 Upper drum
5 T.U. slant pole
6 T.U. guide roller
7 Audio/Control head
8 Loading belt
9 Mode control motor
10 Pinch roller
11 T.U. guide pole
12 Guide arm
13 Capstan
14 T.U. reel disk
15 Lower drum
16 Clutch mechanism
17 SUP reel disk
18 Tension band
19 SUP guide pin
20 SUP guide pole
21 Full erase head
22 Impedance roller
23 Cassette motor
24 Brush
25 Reel belt
26 Capstan motor

### 2.2.2 Service schedule for main components

The following table lists the parts which should receive periodic servicing at the recommended intervals.

| | Part Name | Replacement Part No. | Periodic Service Schedule (Operating Hours) | | | | | | | | | | Reference Section | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | | |
| Tape transport system | Tension pole<br>SUP slant pole<br>SUP guide roller<br>SUP guide pin<br>SUP guide pole<br>Impedance roller<br>TU guide pole<br>Capstan<br>Guide arm<br>TU guide roller<br>TU slant pole<br>Lower drum | | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | | • For cleaning, use a lint-free cloth or gauze dampened with alcohol.<br>• After cleaning with alcohol, allow the parts to dry thoroughly before using a cassette tape. |
| | Upper drum | PQ20013B | ☆ | ○ | ● | ☆ | ○ | ● | ☆ | ○ | ● | ☆ | 2.3.2 | – When cleaning the head tips on the upper drum, do not clean them with a vertical stroke. Use only a gentle back and forth motion in the direction of the tape path. |
| | Full erase head | PU51263-2 | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ○ | 2.3.3 | |
| | Audio/control head | PQ30200C | ☆ | ☆ | ☆ | ☆ | ☆ | ● | ☆ | ☆ | ☆ | ☆ | 2.3.4 | |
| | Pinch roller | PQ40252A | ☆ | ☆ | ☆ | ☆ | ☆ | ● | ☆ | ☆ | ☆ | ☆ | 2.3.5 | |
| Drive system | Capstan motor | PU55829V | | | | | | | | | | ○ | 2.3.6 | |
| | Reel belt | PQM30003-10 | | ☆ | | ● | | ☆ | | ● | | ☆ | | |
| | Mode control motor | PQ40244A-2 | | | | | | | | | | ○ | 2.3.7 | |
| | Loading belt | PQM30003-14 | | ☆ | | ● | | ☆ | | ● | | ☆ | | |
| | Cassette motor | PQ40090A | | | | | | | | | | ○ | 2.3.8 | |
| | SUP reel disk | PU55820-1-2 | | | | △ | | | | △ | | ○ | 2.3.9 | – Do not over lubricate. |
| | TU reel disk | PU55821-1-2 | | | | | | | | | | | | |
| | Clutch mechanism | PU55822A-3 | | ○ | | ○ | | ○ | | ○ | | ○ | 2.3.10 | – Torque check (refer to section 2.4.3). |
| Others | Brush | PU56215 | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ○ | 2.3.11 | |
| | Tension band | PQ40262B-1 | | ○ | | ○ | | ○ | | ○ | | ○ | 2.3.12 | – Back tension check (refer to section 2.4.4) |

☆ Cleaning ● Replacement △ Lubrication ○ Check and Replace if necessary.

**Table 2-2** Standard service periods

Above replacement times will vary greatly according to environmental and usage conditions. Routine inspection and maintenance are also important factors that influence the unit life. Note that rubber parts may become aged or deformed after long periods of storage, even if the unit is not used.

**Note:** Even if the unit is not used frequently, cleaning, lubrication and replacement of the belts should be undertaken every 2 years.

## 2.3 MAIN ASSEMBLY REPLACEMENT

Remove the external covers and the circuit boards, as necessary, to allow replacement.

### 2.3.1 Cassette housing

- Removal of cassette housing

1. Disconnect connector CN1, coming from A/S/M board, from CASS. HOUSING board.
2. Take out four screws ① and remove the earth plate.
3. Carefully lift the cassette housing upwards to remove it.

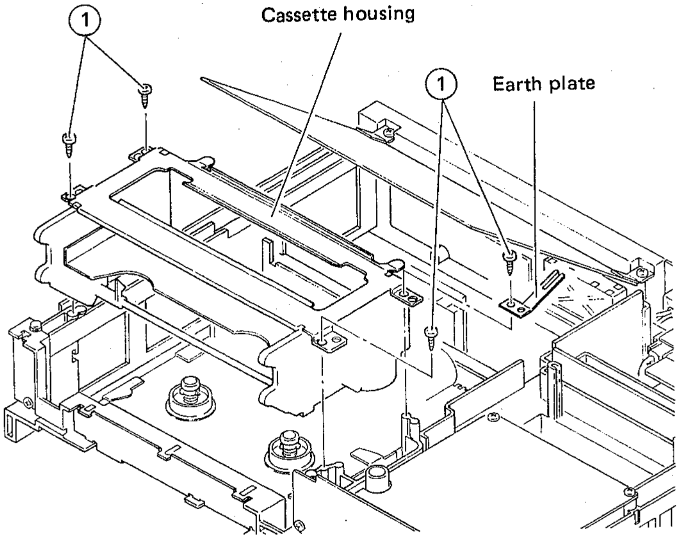


**Fig. 2-7** Removal of cassette housing

- How to operate the set without loading a tape cassette

For service procedures that call for operation of the set without loading the tape around the head drum, extract the cassette housing from the interior of the set and position it as described below.

1. Set a sheet of insulated material (cardboard, plastics, etc.) on the right side of chassis, above the T/T CTL board.
2. Remove the cassette housing from the interior of the set and place it on the insulated sheeting, but do not disconnect the connector from the A/S/M board.
3. Insert a cassette into the cassette housing. The housing mechanism functions to retract the cassette.
4. Since the required sensors are contained within the housing, after the cassette has been retracted, the desired modes can then be obtained by using the operation switches.

### 2.3.2 Upper drum

1. Unsolder the twelve wires connecting the lower drum from the relay pins of the upper drum (perform quickly to avoid damaging the wires).

| RELAY PIN COLOR | CHANNEL | INNER/OUTER |
|---|---|---|
| Brown | SP, CH-1 | Brown/Green |
| Red | SP, CH-2 | Red/White |
| Blue | EP, CH-1 | Blue or Dark blue/Gray |
| Orange | EP, CH-2 | Orange/Yellow |
| Gray | A-1 | Pink or Light gray/Light blue |
| Violet | A-2 | Dark gray/Violet |

**Table 2-3** Upper drum wiring

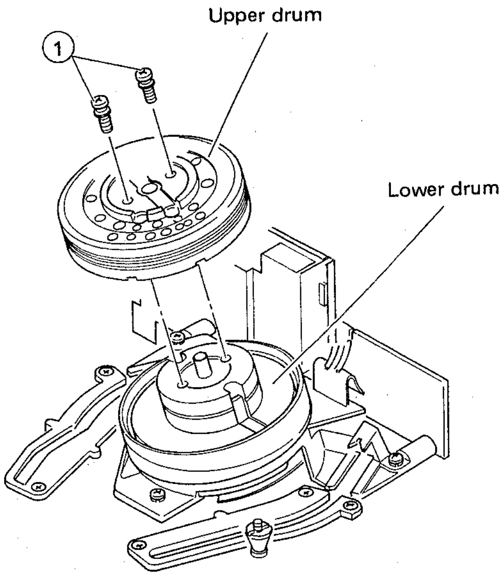


**Fig. 2-8** Upper drum replacement

2. Take out two screws ① and remove the upper drum in the upward direction.
3. Use alcohol to clean the lower face of the new upper drum and the upper face of the lower drum. When handling and installing the new upper drum, avoid directly touching the head tips and use care not to scratch the drum.
4. Reassemble by reversing the above steps. When resoldering, observe the correct channels (refer to Table 2-3) and avoid overheating the wires.
5. Perform the upper drum eccentricity adjustment.
   1) Supply power and set for the Play mode without a cassette housing (refer to section 2.3.1). After completion of loading, disconnect from power.
   2) Set the micro-checker on the reference shaft as shown in Fig. 2-9. Use the accessory hex wrench (metric) to tighten the fixing screw.

**Caution:** The micro-checker is a test fixture for measuring eccenstricity of the upper drum.
When using this fixture, observe the following precautions.

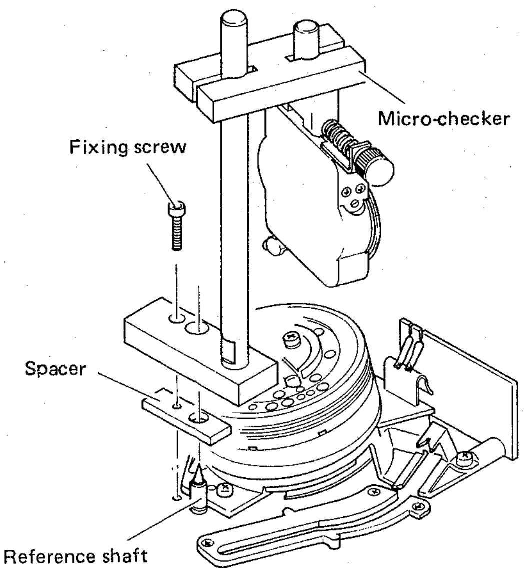

Micro-checker
Fixing screw
Spacer
Reference shaft

**Fig. 2-9** Micro-checker mounting

- **As the instrument is extremely precise, use special care not to drop it or subject it to strong vibration.**
- Do not apply strong force to the test probe.
- The outer frame of the scale can be turned about 7 scale divisions. Do not turn it forcibly (force greater than 300 g-cm).
- **Use care that the jig does not contact the video heads.**
- Before mounting, turn the fine adjust knob counter clockwise (to where the spring tension is no longer felt).
- **Do not apply power while the jigs is installed.**

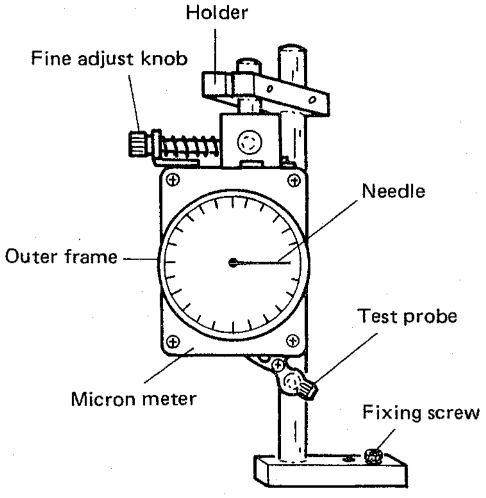

Holder
Fine adjust knob
Needle
Outer frame
Test probe
Micron meter
Fixing screw

**Fig. 2-10** Micro-checker

3) Check and readjust the micro-checker position. The correct position is:
   - The test probe contact point is 2 or 3 mm under the top of the upper drum.
   - The test probe movement direction is toward the center portion of the upper drum.
4) Gradually turn the fine adjust knob clockwise so that the test probe contacts the upper drum. The dial indicator registers zero on the scale.
5) While using care not to apply lateral pressure to the upper drum, slowly turn the upper drum and read the deviations indicated by the micro-checker.
6) Check for needle deflection within 4 microns.
7) If deviation is greater than 4 microns, after turning the fine adjust knob counterclockwise to disengage the test probe from the upper drum, loosen two screws ① and carefully readjust the upper drum position, then retighten the two screws in a balanced manner. Repeat above steps 4) to 6).
8) After using, turn the fine adjust knob counterclockwise and remove the micro-checker.
9) Supply power and set for the Stop mode.

6. Perform the interchangeability adjustment (refer to section 2.4.6).

### 2.3.3 Full erase head

1. Unsolder the two terminals coming from the full erase head and remove the F.E. HEAD board.
2. Take out nut ① and remove the guide pole, guide flanges and coil spring.
3. Unhook the torsion spring from the erase head arm and remove the erase head arm in the upward direction.
4. Take out screw ② to remove the full erase head.
5. Replace the full erase head and reassemble by reversing the above steps.
6. Perform the guide pole height adjustment (refer to section 2.4.5).

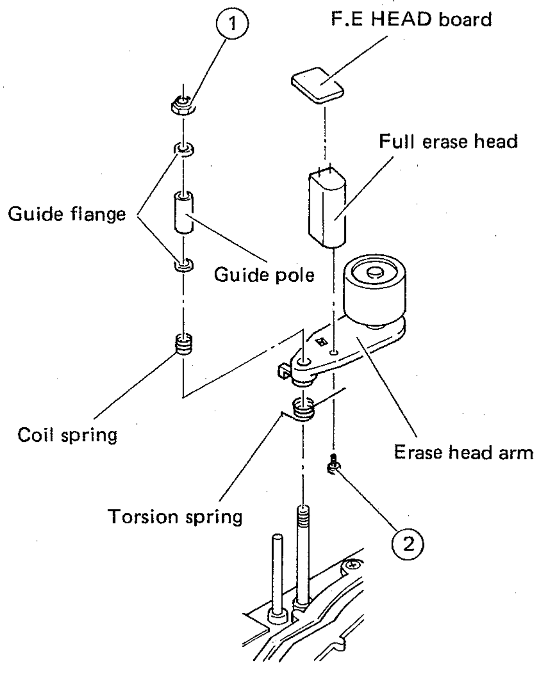
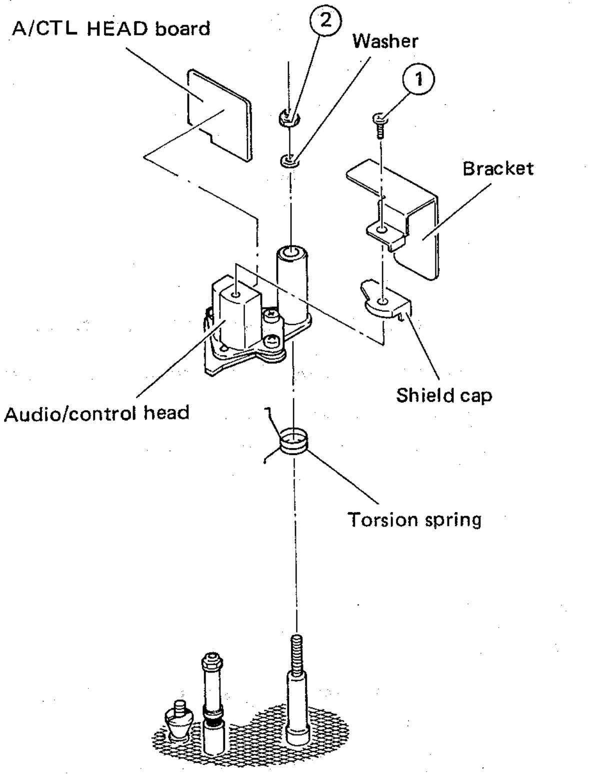

①
F.E HEAD board
Full erase head
Guide flange
Guide pole
Coil spring
Erase head arm
Torsion spring
②

**Fig. 2-11** Replacement of F.E head

### 2.3.4 Audio/control head

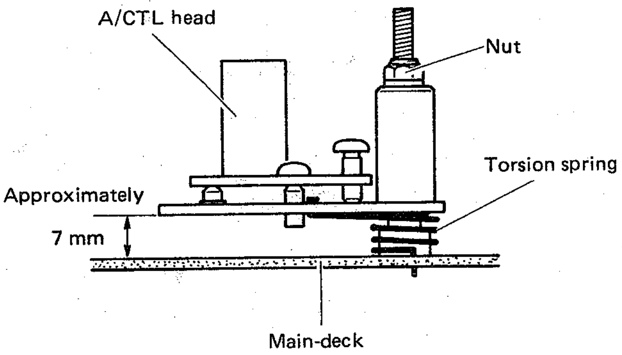
1. Take out screw ① to remove the bracket and shield cap.
2. Take out nut ② and remove the washer.
3. Unhook the torsion spring from the audio/control head and remove the audio/control head in the upward direction.



A/CTL HEAD board
②
Washer
①
Bracket
Audio/control head
Shield cap
Torsion spring

**Fig. 2-12** Replacement of A/CTL head

4. Unsolder the ten terminals coming from the heads and remove the A/CTL HEAD board.
5. Replace the audio/control head and reassemble by reversing the above steps.
6. Turn the nut and preadjust the audio/control head height as shown in Fig. 2-13.



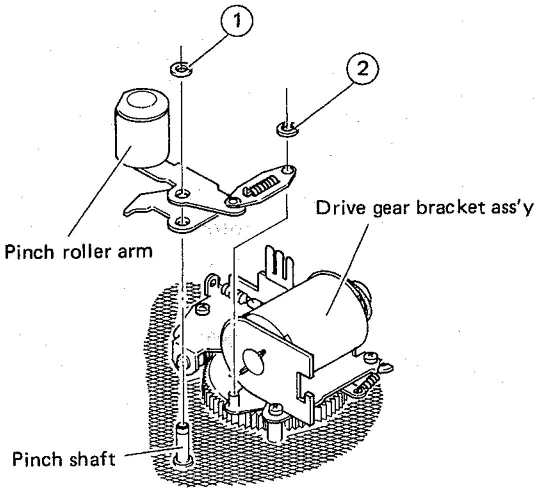
A/CTL head
Nut
Torsion spring
Approximately
7 mm
Main-deck

**Fig. 2-13** A/CTL head height

7. Perform the tape transport/interchangeability checks and adjustments (refer to sections 2.4.5 and 2.4.6).

### 2.3.5 Pinch roller

1. Take out slit washer ① and slit washer ②, and remove the pinch roller arm in the upward direction.
2. After cleaning the pinch shaft, spread grease on it.
3. Replace the pinch roller arm and reassemble by reversing the above steps. Avoid staining the pinch roller with grease.

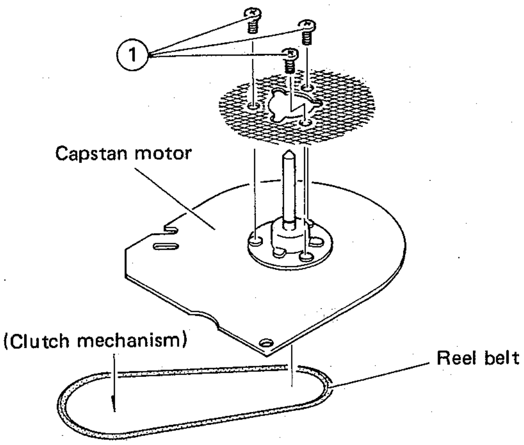


①
②
Drive gear bracket ass'y
Pinch roller arm
Pinch shaft

**Fig. 2-14** Replacement of pinch roller

### 2.3.6 Capstan motor

1. Disconnect connectors CN405 and CN407 from the A/S/M board.
2. Disengage the motor wires from the clamps and pull out the two cables.
3. Disengage the reel belt from the capstan motor and the pulley of the clutch mechanism assembly.
4. Take out three screws ① and remove the capstan motor in the downward direction. Use care regarding the motor brake.
5. Replace the capstan motor and reassemble by reversing the above steps.
6. Perform the capstan DISCR. position adjustment (refer to section 3.5.3).



①
Capstan motor
(Clutch mechanism)
Reel belt

**Fig. 2-15** Replacement of capstan motor

### 2.3.7 Mode control motor

1. Unsolder the two terminals coming from the motor and remove the MOTOR board. Use care regarding the clamped wires.
2. Take out slit washer ① and move the spring holder aside.
3. Take out slit washers ② and ③, remove the cam arm upwards.
4. Take out three screws ④ and remove the drive gear bracket assembly upwards.
5. Disengage the belt, take out two screws ⑤ and remove the mode control motor.
6. Replace the motor and reassemble by reversing the above steps. Remount the motor so that the terminal with the ⊕ mark is soldered to the upper connection on the circuit board, as shown in figure.
7. Perform the loading gear (1) timing check (refer to section 2.4.1).

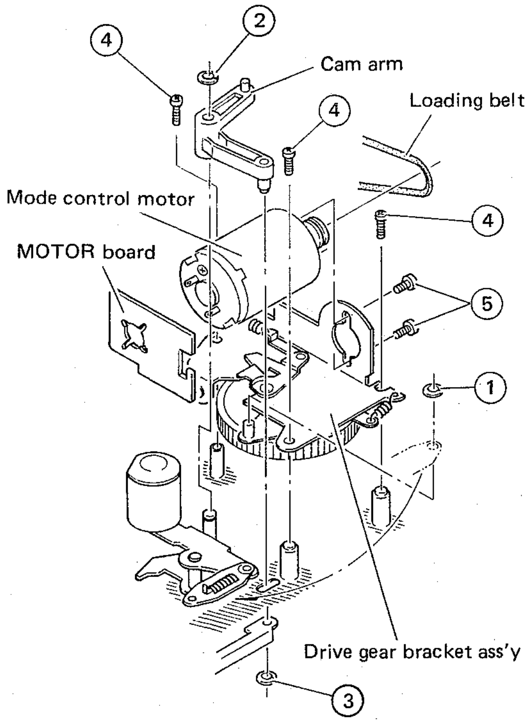

④
②
Cam arm
④
Loading belt
Mode control motor
④
MOTOR board
⑤
①
Drive gear bracket ass'y
③

**Fig. 2-16** Removal of mode control motor

### 2.3.8 Cassette motor

1. Remove the cassette housing (refer to section 2.3.1).
2. Unsolder the two wires from the cassette motor.

| DISTINCTION | WIRE COLOR |
|---|---|
| Thick boss | White |
| Thin boss | Gray |

**Table 2-4** Cassette motor wiring

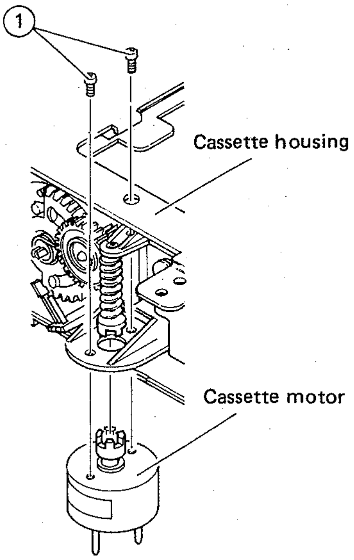

①
Cassette housing
Cassette motor

**Fig. 2-17** Replacement of cassette motor

3. Take out two screws ① and remove the cassette motor.
4. Replace the cassette motor and reassemble by reversing the above steps. Use care regarding the motor wire polarity (refer to Table 2-4).
5. Reinstall the cassette housing into its original position.

### 2.3.9 Reel disks

- Supply reel disk

1. Take out slit washer ① and remove the supply loading brake with spring.
2. Take out screw ② and move the tension band to the side.
3. Take out slit washer ③ and remove the supply reel disk upwards. Use care regarding the washers.

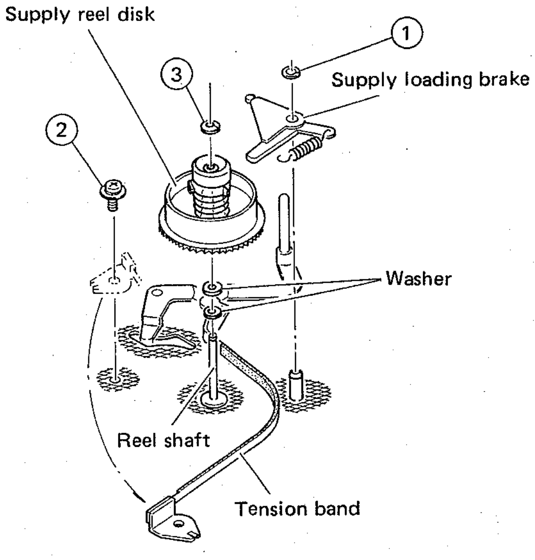

Supply reel disk
①
③
Supply loading brake
②
Washer
Reel shaft
Tension band

**Fig. 2-18** Replacement of supply reel disk

4. After cleaning the reel shaft with alcohol, lubricate it with one drop of sewing machine oil. Do not over lubricate.
5. Replace and install the supply reel disk, and perform the reel disk height check (refer to section 2.4.5).
6. Mount the tension band and supply loading brake as before, and perform the tension pole position check (refer to section 2.4.2).
7. Perform the back tension check (refer to section 2.4.4).

- Take-up reel disk

1. Take out slit washer ① and remove the search brake with spring.
2. Take out slit washer ② and remove the take-up reel disk upwards while moving the take-up loading brake. Use care regarding the washers.
3. After cleaning the reel shaft with alcohol, lubricate it with one drop of sewing machine oil. Do not over lubricate.
4. Replace and install the take-up reel disk, and perform the reel disk height check in the same manner as the supply reel disk (refer to section 2.4.5).
5. Install the search brake as before.

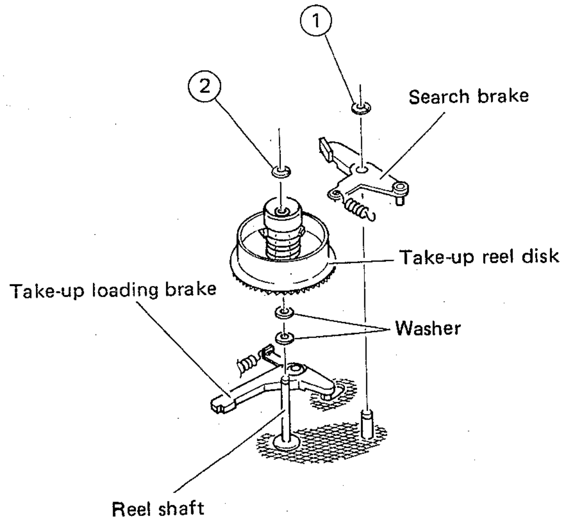

①
②
Search brake
Take-up reel disk
Take-up loading brake
Washer
Reel shaft

**Fig. 2-19** Replacement of take-up reel disk

### 2.3.10 Clutch mechanism

1. Disengage the six springs from the clutch mechanism. These springs come from the supply loading brake, teke-up loading brake, main brake slider, supply main brake, take-up main brake and cancel lever.
2. Disengage the reel belt from the pulley of the clutch mechanism.
3. Take out screw ① and remove the supply reel sensor, then unhook the sensor wires from the hooks of the clutch mechanism.
4. Take out three screws ② and remove the clutch mechanism downwards.
5. Replace the clutch mechanism and reassemble by reversing the above steps.
6. Perform the take-up torque check (refer to section 2.4.3).

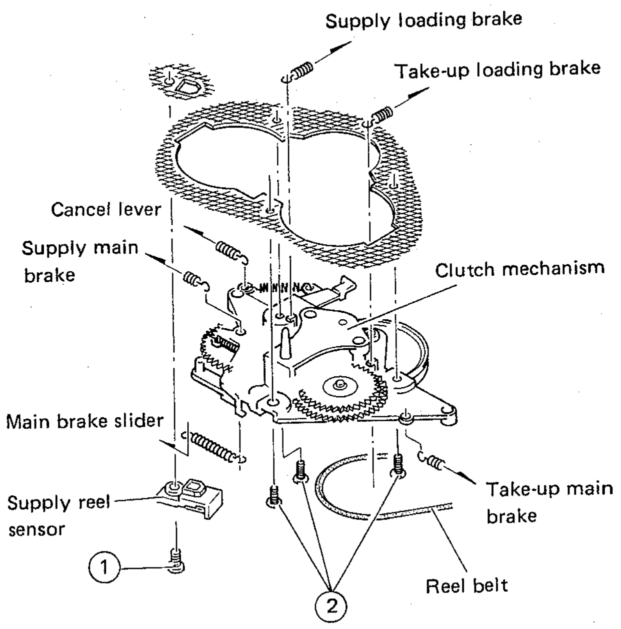

Supply loading brake
Take-up loading brake
Cancel lever
Supply main brake
Clutch mechanism
Main brake slider
Take-up main brake
Supply reel sensor
①
Reel belt
②

**Fig. 2-20** Replacement of clutch mechanism

### 2.3.11 Brush

1. Take out screw ① and remove the brush, and clean the commutator with alcohol.
2. Replace and install the brush as before, check that the brush contacts the center of the commutator.

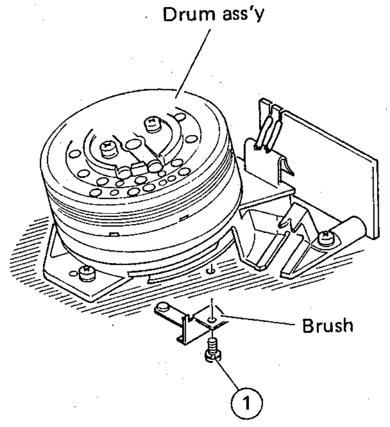

Drum ass'y
Brush
①

**Fig. 2-21** Replacement of brush

### 2.3.12 Tension band

1. Take out slit washer ① to remove the tension arm, and disengage the spring from the tension arm.
2. Take out slit washer ② and remove the supply loading brake with spring.
3. Take out screw ③ and remove the tension band and tension arm together in the upward direction. Use care regarding the washer.

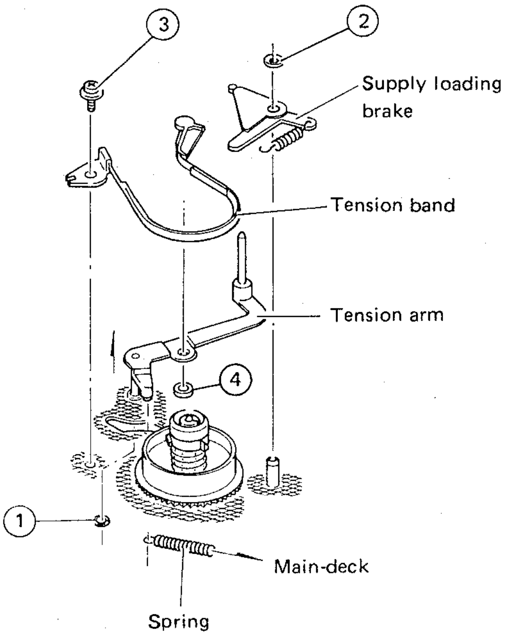


**Fig. 2-22** Replacement of tension band

4. Take out slit washer ④ and disengage the tension band from the tension arm, and replace the tension band.
5. Clean and lubricate the tension arm shaft with sewing machine oil, and reassemble by reversing the above steps.
6. Perform the tension pole position check and the back tension check (refer to sections 2.4.2 and 2.4.4).

### 2.3.13 Pick-up head

1. Unsolder the two wires from the terminals of the pick-up head.
2. Take out screw ① and remove the pick-up head.
3. Replace and reassemble the pick-up head by reversing the above steps. Use care regarding the wire polarity. Check that the pick-up head is toward the center portion of the drum shaft.
4. Perform the drum pulse level adjustment (refer to section 3.5.1).

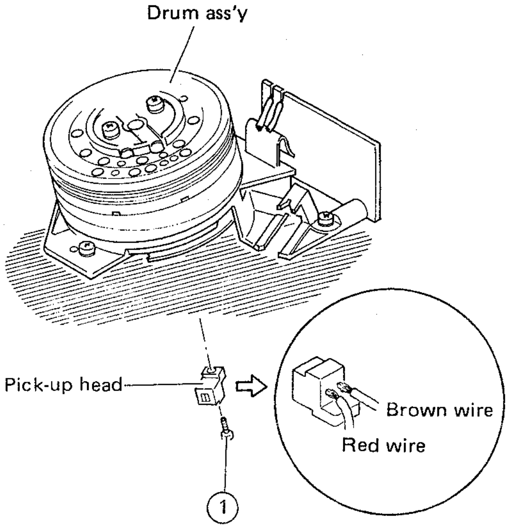


**Fig. 2-23** Replacement of pick-up head

## 2.4 CHECKS AND ADJUSTMENTS

### 2.4.1 Mechanism timing check

- Loading rings and loading gear (2)

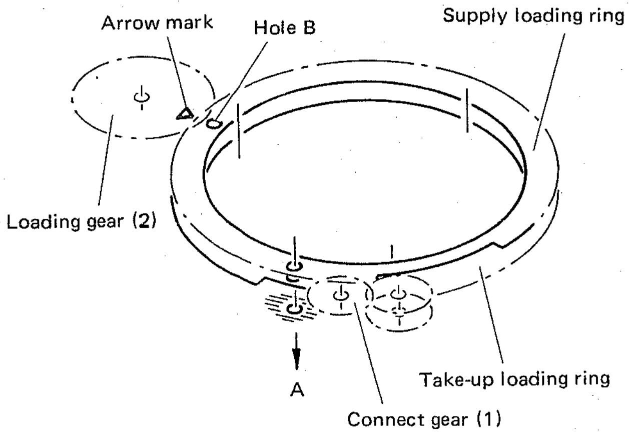

Arrow mark
Hole B
Supply loading ring
Loading gear (2)
A
Take-up loading ring
Connect gear (1)

**Fig. 2-24** Loading ring/loading gear (2)

1. Confirm that the two holes of supply and take-up loading rings are aligned with the hole of the main-deck (arrow A in Figure). If a discrepancy is noted, after removing the loading gear (2), adjust the loading rings to obtain the correct position.
2. At the same time, confirm that the arrow mark of the loading gear (2) corresponds with hole B of the supply loading ring. If a discrepancy is noted, remove and reinstall the loading gear (2) to obtain the correct position.

- Cam gear (drive gear bracket) and loading gear (1)

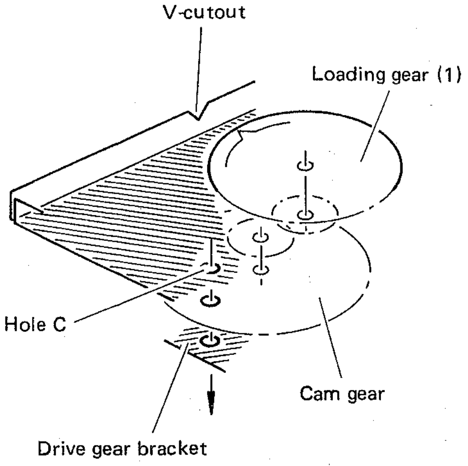

V-cutout
Loading gear (1)
Hole C
Cam gear
Drive gear bracket

**Fig. 2-25** Cam gear/loading gear (1)

1. When the two holes of cam gear and drive gear bracket are aligned with the hole C of the main-deck, confirm that the arrow mark of loading gear (1) is aligned with the V-cutout portion of the main-deck. If a discrepancy is noted, remove and reinstall the loading gear (1) to obtain the correct position.

### 2.4.2 Tension pole position check

1. Without loading a tape, set for the Play mode (refer to section 2.3.1).
2. Confirm the the center of the tension pole lies upon the right side of the main-deck cutout portion as shown in Fig. 2-26.
3. If necessary, loosen screw ① and adjust the tension band holder to obtain the correct tension pole position.

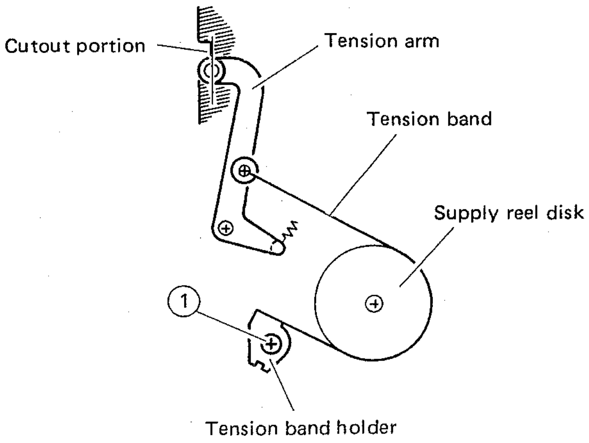

Cutout portion
Tension arm
Tension band
Supply reel disk
①
Tension band holder

**Fig. 2-26** Tension pole position

### 2.4.3 Take-up torque check

1. Set the Play (2H: SP) mode without the cassette housing.
2. Set the torque gauge on the take-up reel disk.
3. Relax the grip on the torque gauge so that the indicator needle and scale rotate at equal speed, then read the indication. The correct value is between 60 and 100 gf-cm.
4. If not the correct value, install a new clutch mechanism.

### 2.4.4 Back tension check

1. Use the back tension cassette gauge and set for the Play (2H: SP) mode.
2. Confirm that the indication is between 11 and 19.
3. If not the correct value, check the tension pole position (refer to section 2.4.2) and the condition of the spring between tension arm and main-deck.
4. If necessary, replace the tension band (refer to section 2.3.12).

### 2.4.5 Tape transport system checks and adjustments

The tape transport system has been precisely aligned at the factory and normally does not require readjustment. The following check is therefore necessary only in cases of severe usage or when replacing parts affecting the tape transport system.

- Tape transport checks

1. Use a 120-minute tape and check at the tape beginning and ending portion according to the following steps.

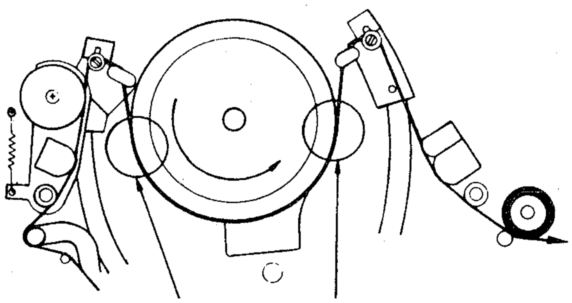


**Fig. 2-27** Drum entrance/exit

1) During Play mode, observe tape at the entrance and exit portions of the drum lead.
Confirm that the tape slips neither upward nor downward with respect to the lead.

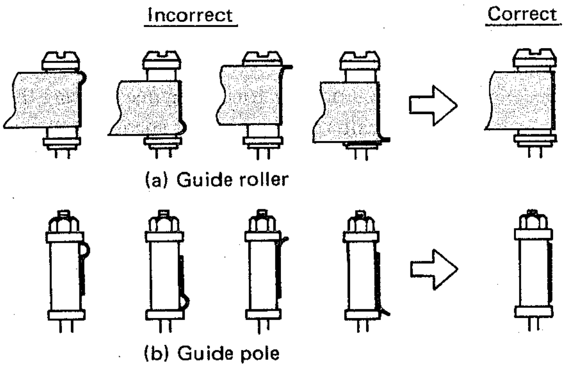


**Fig. 2-28** Guide roller/guide pole

2) If defects are noted during the above check, perform the guide roller height adjustment.
3) During Play mode, observe the tape at the take-up and supply guide poles and guide rollers.
Confirm absence of curling, wrinkling, etc.
4) If defects are noted during the above check, perform the guide pole height adjustment.

2. At the ending portion of the recorded 120-minute tape, set for the Search Rev. (7 times speed) mode.

1) Confirm absence of curling, wrinkling, slip, etc. at the take-up guide pole.
2) In the same manner, during Slow Rev. (1/5 speed) mode, check at the take-up guide pole.
3) If defects are noted during the above checks, perform the reverse tape path adjustment.

3. Perform the interchangeability checks and adjustment (refer to section 2.4.6).

- Guide roller height adjustment

1. Slightly loosen setscrew under the guide roller of the pole base.
2. Use a cassette tape and set for the Play mode.
3. With a slotted screwdriver, slightly turn the guide roller so that the tape travels smoothly in the drum lead without slipping upwards or downwards.

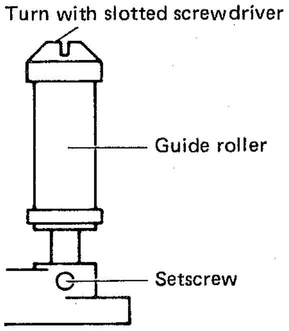


**Fig. 2-29** Guide roller height adjustment

**Notes:**

1) Loosen the setscrew only enough to allow the guide roller to be turned.
If excessively loose, tape motion may turn the roller inadvertently.
2) Turn the roller carefully to avoid damage to the tape.

- Supply guide pole height adjustment

1. Remove the left bracket of the main-deck by taking out the two screws, set the height gauge on the maindeck.

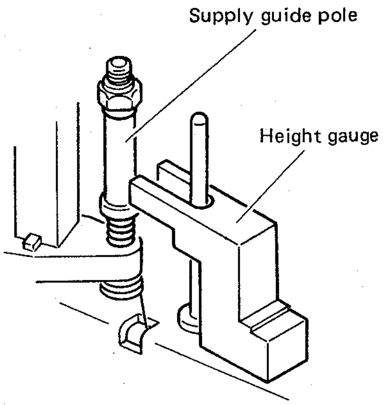


**Fig. 2-30** Height of supply guide pole

2. Check the height of the upper face of the lower flange. If necessary, carefully adjust by turning the nut.
3. Use a cassette tape and set for the Play mode.

4. Use a metric nutdriver to turn the nut to align the tape lower edge with the upper face of the lower guide flange. However, this adjustment must be performed within ±0.5 mm (1 turn: 0.5 mm) of the height adjusted by the height gauge.
5. If there is a large discrepancy, check the height of the supply reel disk, tension pole and other mechanical components.

- Take-up guide pole height adjustment

1. Remove the LED holder by taking out the screw, set the height gauge on the main-deck.
2. Check the height of the upper face of the spacer. If necessary, carefully adjust by turning the nut.
3. Use a cassette tape and set for the Play mode.
4. Turn audio/control head screw ① and align the tape lower edge with the upper face of the lower guide flange.

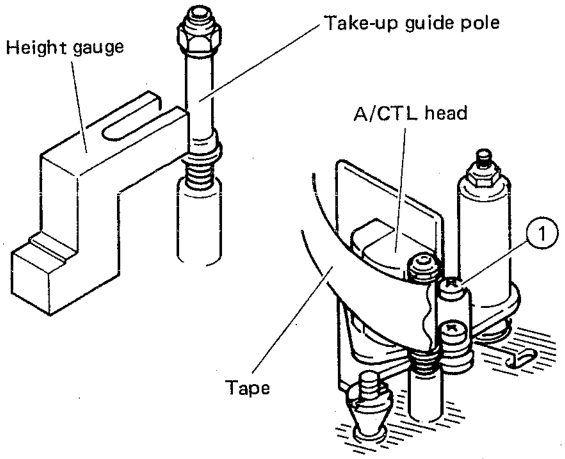

Height gauge
Take-up guide pole
A/CTL head
①
Tape

**Fig. 2-31** Height of take-up guide pole

**Note:** Do not adjust the height of the take-up guide pole itself.

- Reel disk height check

1. Set the height gauge on the main-deck.

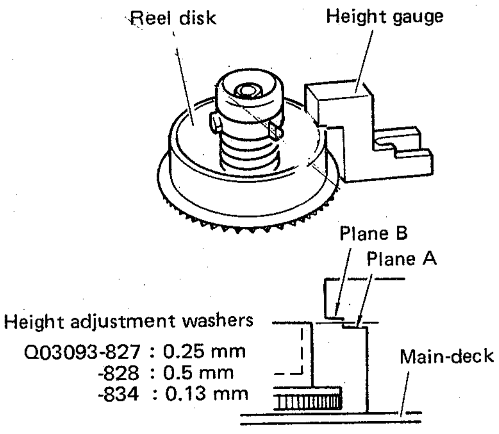

Reel disk
Height gauge
Plane B
Plane A
Height adjustment washers
Q03093-827 : 0.25 mm
-828 : 0.5 mm
-834 : 0.13 mm
Main-deck

**Fig. 2-32** Height of reel disk

2. Check the reel disk height. The correct height is between planes A and B.
3. If not correct, use the height adjustment washers to obtain the correct height.

- Reverse tape path adjustment

1. At the ending portion of the recorded 120-minute tape, set for the Search Rev. (7 times speed) mode.
2. Adjust the setscrew of the guide arm for smooth tape transport at the take-up guide pole.

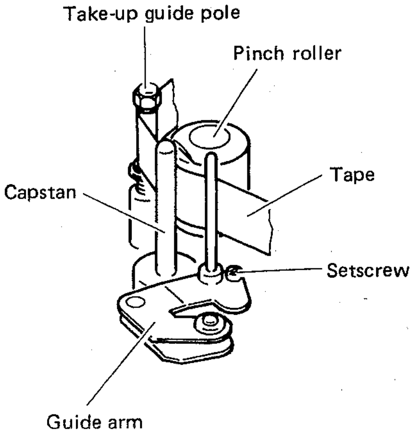

Take-up guide pole
Pinch roller
Capstan
Tape
Setscrew
Guide arm

**Fig. 2-33** Reverse tape path

**Note:** Two or three seconds may elapse after adjusting the setscrew for the effect to appear at the take-up guide pole.

3. Set for the Slow Rev. (1/5 speed) mode and confirm absence of curling, wrinkling, etc.
4. If defects are noted, repeat the above steps 1 and 2.

### 2.4.6 Interchangeability checks and adjustments

Before using an alignment tape, use a regular tape and confirm correct tape transport operation.

- Preliminary checks and adjustments

1. Connect an oscilloscope to TP-6 (FM OUT) of the VIDEO board. Trigger the oscilloscope externally with the signal from TP-28 (DRUM F.F.) of the VIDEO board.
2. Play the alignment tape (stairstep signal) MH-1.

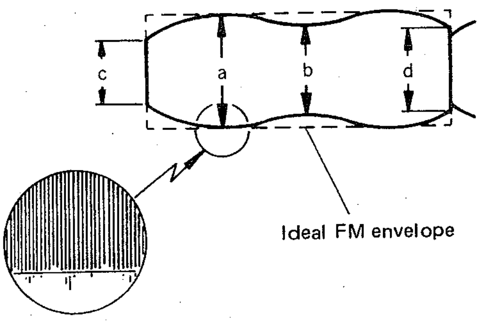

c
a
b
d
Ideal FM envelope

**Fig. 2-34** FM waveform (max. output)

1) Turn the TRACKING knob to obtain the maximum FM output.
Observe the FM waveform, read the maximum level (a) and the minimum levels (b), (c) and (d). Confirm that:

$$\frac{b}{a} \geqq 0.7,\ \frac{c}{a} \geqq 0.5 \text{ and } \frac{d}{a} \geqq 0.5$$

**Note:** If the waveform is serrated, read the value at the most uniform serrations.

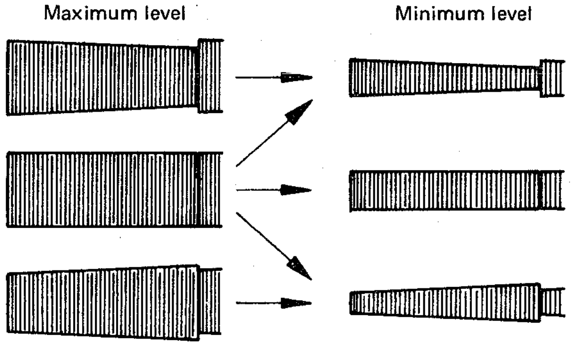


**Fig. 2-35** Normal waveform examples

2) Turn the TRACKING knob to vary the FM output from maximum to minimum.
Confirm that the waveform variation is nearly parallel.

3) If the above checks yield normal results, proceed to the audio/control head adjustments.
If defects are noted, perform the following adjustments.

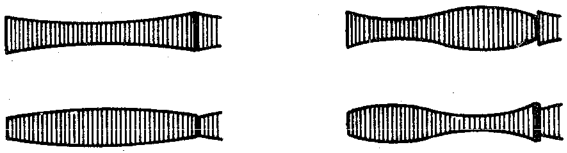


**Fig. 2-36** Incorrect waveform examples

3. Loosen the setscrews of the supply and take-up guide rollers. If the guide rollers turn freely, slightly tighten the setscrews.
4. Play the alignment tape (stairstep signal) MH-1.
5. Observe oscilloscope display and adjust the TRACKING knob for maximum FM output.

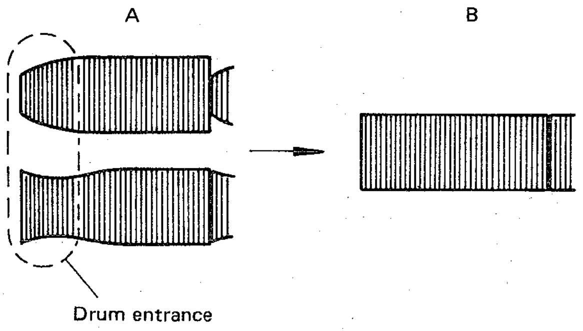


**Fig. 2-37** Drum entrance adjustment

1) Refer to Figure. Examples of incorrect waveforms are shown by A.
Use a slotted screwdriver to adjust the supply guide roller so that the rising portion (drum entrance) of the waveform becomes flat as shown by B.

2) In the same manner as for the drum entrance, turn the take-up guide roller to adjust the falling portion (drum exit) of the FM waveform.
Incorrect examples are shown by C in Figure, while D indicates the correct adjustment.

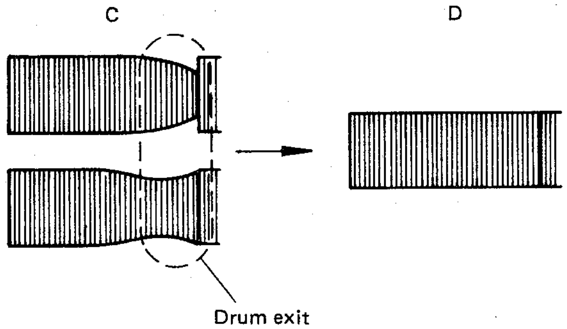


**Fig. 2-38** Drum exit adjustment

3) In addition to observing the waveform, confirm absence of tape slippage or curling at the supply and take-up guide poles.
If the tape separates from the guide or wrinkling occurs at the supply guide pole, adjust the supply guide pole height (refer to section 2.4.5).
If at the take-up guide pole, adjust by turning the audio/control head screw (refer to section 2.4.5).

6. Observe the FM waveform and adjust the TRACKING knob for minimum FM output level.

1) If the waveform becomes similar to A, B, C or D in Figure, carefully adjust the supply and take-up guide rollers so that the waveform becomes similar to E, F or G.

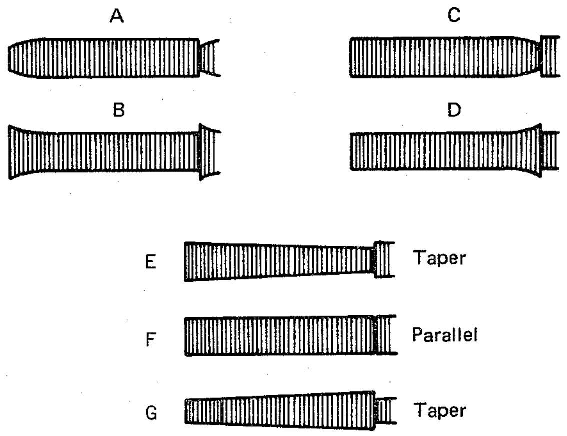


**Fig. 2-39** Minimum FM waveform

**Note:** At this time, if the waveform fluctuates, adjust for minimum fluctuation.

2) Vary the FM output level and perform fine adjustment of the supply and take-up guide rollers.

- Audio/control head height and azimuth adjustments

Incorrect audio/control head height can impair audio signal-to-noise ratio when playing back a pre-recorded tape.

1. Connect CH-1 probe of the oscilloscope to the terminal (L. AUDIO OUT) and CH-2 probe to the terminal (R. AUDIO OUT) of the TERMINAL board.
2. Turn the AUDIO OUT MONITOR knob fully counterclockwise (NORMAL) and set the switch to STEREO.
3. Play 7 kHz segment (stairstep signal) of the alignment tape MH-1.

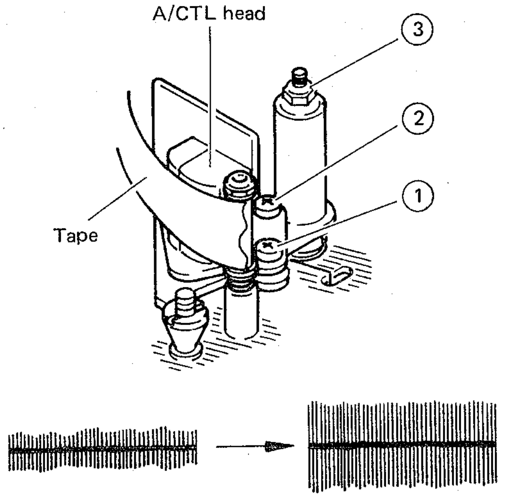


Fig. 2-40 Audio/Control head adjustment

1) Turn screw ① and screw ② to obtain two maximum audio outputs (CH-1 and CH-2). Adjust azimuth with screw ① and with screw ② so that small tape wrinkles are not produced at the take-up guide pole.
2) Turn nut ③ so that the two audio outputs become maximum.
3) Observe the audio waveforms and adjust screw ① so that the CH-1 waveform in phase with the CH-2 waveform.

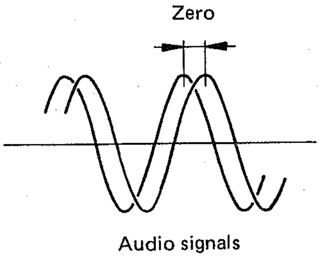


Fig. 2-41 Audio head phase adjustment

- Setscrew tightening

1. After confirming absence of tape wrinkling and other transport irregularities, tighten the setscrews while in the Stop mode.

   **Note:** Since the guide rollers are easily moved, use care when tightening.
2. Again perform the preliminary checks.

- Servo circuit adjustment

1. Perform P.B./REC switching point adjustment (refer to sections 3.5.4 and 3.5.5).
2. Perform tracking preset adjustment (refer to section 3.5.6 and 3.5.7).

- Control head phase adjustment

1. Connect an oscilloscope to TP-6 (FM OUT) of the VIDEO board. Trigger the oscilloscope externally with the signal from TP-28 (DRUM F.F.) of the VIDEO board.
2. Play the alignment tape (stairstep signal) MH-1.
3. Set the trigger to ⊕ slope and observe the CH-2 FM waveform.

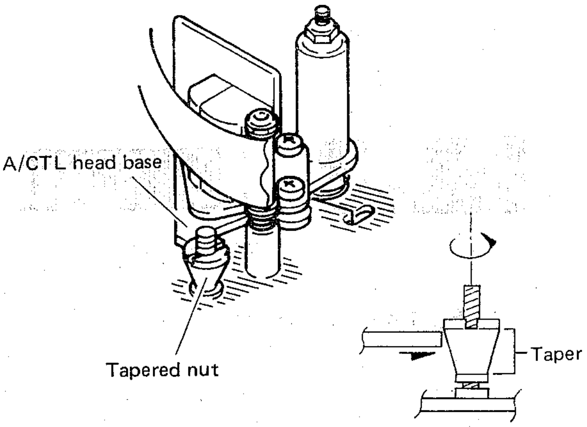


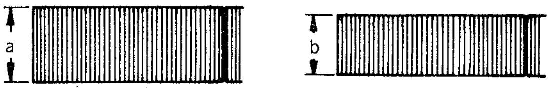
Fig. 2-42 Control head phase adjustment

1) Set the TRACKING knob to AUTO (center click position).
2) Turn the tapered nut clockwise so that the A/CTL head base comes into contact with the upper border of the taper portion of the tapered nut as shown in Figure.
3) Observe the FM output level and turn the tapered nut counterclockwise to obtain the first maximum FM output level.

- Final checks

1. Connect an oscilloscope to TP-6 (FM OUT) of the VIDEO board. Trigger the oscilloscope externally with the signal from TP-28 (DRUM F.F.) of the VIDEO board.
   1) Play the alignment tape MH-1L (stairstep signal). Confirm that the FM waveform satisfies the specifications during playback of alignment tape MH-1. Refer to Fig. 2-34.
   2) Supply a video signal and perform recording, then playback. Confirm that the FM waveform also satisfieds the specifications during playback of MH-1.
   (Both SP/EP modes.)
2. Connect CH-1 probe of the oscilloscope to TP-6 (FM OUT) of the VIDEO board and CH-2 probe to TP-3 of the FMA board.
   1) Play the alignment tape (stairstep signal) MH-7.
   2) Set the trigger to ⊕ slope and observe the CH-2 video and audio FM waveforms.
   3) Turn the TRACKING knob to obtain the maximum video FM waveform.
   4) Observe the audio FM output and confirm that the level difference between this setting and the maximum level obtained manually is :

$$\frac{b}{a} \geqq 0.9$$



Maximum (Manually)

(When maximizing VIDEO FM)

**Fig. 2-43** Audio FM output level

   5) When the audio FM waveform is as shown in Fig. 2-34, confirm that:

$$\frac{b}{a} \geqq 0.8, \quad \frac{c}{a} \geqq 0.6, \quad \frac{d}{a} \geqq 0.6$$

**Note:** If the FM dropout is noted, perform the FM audio switching point adjustment (refer to section 3.7.5) before confirmation.

   6) Without an audio signal, perform recording in the SP mode, then playback. Confirm the audio FM waveform satisfies the specifications during playback of alignment tape MH-7.
3. Perform overall checks and adjustments of the servo circuit (refer to section 3.5) and video circuit (refer to section 3.6).
4. Perform the audio circuit adjustment (refer to section 3.7).

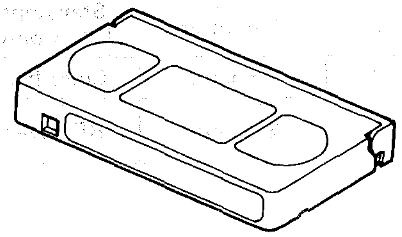
# SECTION 3
# ELECTRICAL ADJUSTMENTS

## 3.1 PREPARATION

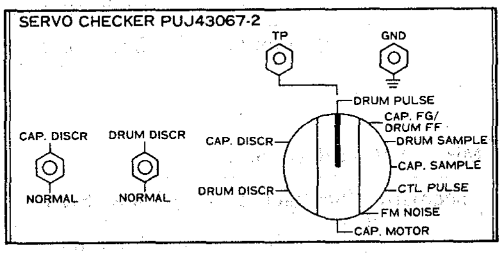
Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

## 3.2 REQUIRED TEST EQUIPMENT AND JIG

1. Color television monitor
2. Oscilloscope: (wide-band, dual trace)
3. Test signal generator: color bar, stairstep
4. Frequency counter
5. Audio tester (combination audio frequency oscillator and meter)
6. Digital voltmeter
7. Recording tape
8. MH-1, MH-1L, MH-1M, MH-7



9. Servo checker PUJ43067-2


SERVO CHECKER PUJ43067-2
TP
GND
DRUM PULSE
CAP. FG/
DRUM FF
DRUM SAMPLE
CAP. SAMPLE
CTL PULSE
FM NOISE
CAP. MOTOR
CAP. DISCR
DRUM DISCR
CAP. DISCR
DRUM DISCR
NORMAL
NORMAL

### 3.2.1 JVC alignment tape contents

1. MH-1 (Standard Play: 2 H mode) contents

| Segment | Playback Time | Video Signal | Audio Signal | Applications |
|---|---|---|---|---|
| 1 | 10 minutes | Stairsteps | 7 kHz | • Interchangeability checks and adjustments<br>• Servo circuit checks and adjustments<br>• Audio head azimuth adjustments |
| 2 | 5 minutes | (none) | 3 kHz | • Tape speed checks<br>• Wow and flutter checks |
| 3 | 10 minutes | Color bars | 1 kHz | • Video signal playback circuit checks and adjustments<br>• Audio signal playback circuit checks and adjustments |
| 4 | 3 minutes | RF sweep | (none) | • Video head resonance adjustments<br>• Markers: 2.0, 4.0, 5.0 MHz |

**Table 3-1**

2. MH-1L (Extended Play: 6 H mode) contents

| Segment | Playback Time | Video Signal | Audio Signal | Applications |
|---|---|---|---|---|
| 1 | 5 minutes | Stairsteps (CH-1 only) | (none) | • Servo circuit checks and adjustments |
| 2 | 5 minutes | Color bars | (none) | • Video signal playback circuit checks and adjustments |
| 3 | 3 minutes | RF sweep | (none) | • Video head resonance adjustments<br>• Markers: 2.0, 4.0, 5.0 MHz |

**Table 3-2**

3. MH-1M (Long Play: 4 H mode) contents

| Segment | Playback Time | Video Signal | Audio Signal | Applications |
|---|---|---|---|---|
| 1 | 5 minutes | Stairsteps | (none) | • Servo circuit checks and adjustments |
| 2 | 10 minutes | Color bars | 1 kHz | • Video signal playback circuit checks |

**Table 3-3**

4. MH-7 (FM Audio) contents

| Segment | Playback Time | Video Signal | Audio Signal | Applications |
|---|---|---|---|---|
| 1 | 5 minutes | Stairsteps | Carrier only | • Interchangeability checks for video and audio |
| 2 | 5 minutes | Color bars | 1 kHz (±50kHz DEV.) | • FM audio signal playback circuit checks and adjustments |

**Table 3-4**

**Note:** Audio signal should be used for FM audio only.

## 3.3 REGULATOR SYSTEM ADJUSTMENTS ( $\boxed{0}\boxed{2}$ REG board)

**Note:** Unless otherwise specified, test points and variable resistors are located on the Regulator board.

### 3.3.1 5 V DC output voltage

Mode : E-E
Digital Voltmeter : TP-5

1. Adjust R17 for 5.2 ± 0.1 V.

### 3.3.2 12 V DC output voltage

Mode : E-E
Digital Voltmeter : TP-1

1. Adjust R12 for 12.5 ± 0.1 V.

## 3.4 MECHACON SYSTEM ADJUSTMENTS ( $\boxed{0}\boxed{4}$ A/S/M board)

**Note:** Unless otherwise specified, test points and variable resistors are located on the A/S/M board.

### 3.4.1 Clock frequency

Mode : E-E
Signal : No signal
Frequency Counter: Pin 23 of IC202

1. Confirm that the clock frequency becomes 3 MHz ± 0.1 MHz.

## 3.5 SERVO SYSTEM ADJUSTMENTS
## ( 04 A/S/M board)

**Notes:**

1. Use the servo checker for checks and adjustments of the servo circuit.
2. Disconnect the AC plug before connecting the servo checker.
3. Unless otherwise specified, test points and variable resistors are located on the A/S/M board.

**Preparation**

- **Servo checker**

1. Connect the 10-pin plug of the checker to the 10-pin socket CN on the A/S/M board. Connect the ground of the checker to a chassis ground point.
2. Connect the oscilloscope probe to the TP and GND terminals of the servo checker. See Fig. 3-1. By using the selector switch, different waveforms can be observed.
3. Unless otherwise specified, set the CAP. DISCR. and DRUM DISCR. switches to the NORMAL positions.

SUPPLEMENT

1. When using an earlier SERVO CHECKER (PUJ43067), it can be modified as shown in Fig. 3-37.

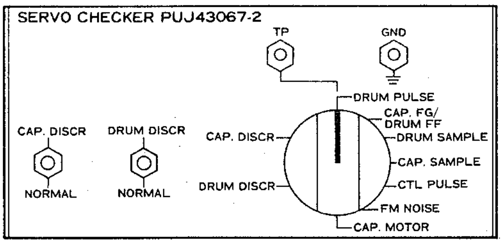

SERVO CHECKER PUJ43067-2
TP
GND
CAP. DISCR
DRUM DISCR
NORMAL
NORMAL
CAP. DISCR
DRUM DISCR
DRUM PULSE
CAP. FG/
DRUM FF
DRUM SAMPLE
CAP. SAMPLE
CTL PULSE
FM NOISE
CAP. MOTOR

Fig. 3-1 Servo checker

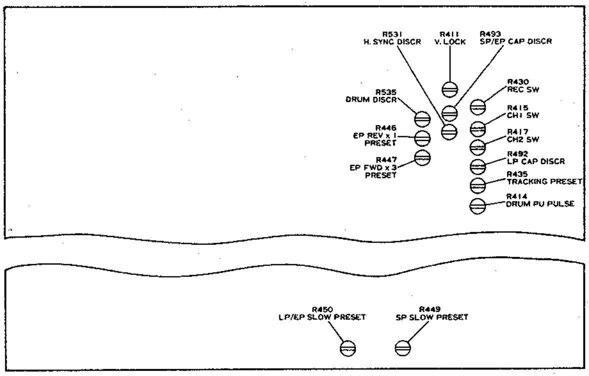
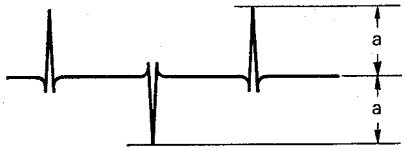

R531
H. SYNC DISCR
R411
V. LOCK
R493
SP/EP CAP DISCR
R430
REC SW
R535
DRUM DISCR
R415
CH1 SW
R446
EP REV x 1
PRESET
R417
CH2 SW
R447
EP FWD x 3
PRESET
R492
LP CAP DISCR
R435
TRACKING PRESET
R414
DRUM PU PULSE
R450
LP/EP SLOW PRESET
R449
SP SLOW PRESET

Fig. 3-2 Adjustment locations

### 3.5.1 Drum pulse level

Mode : REC (SP mode)
Signal : Color bar
REC Select SW : AUX
Trigger of
Oscilloscope : Internal
Selector SW of
Servo Checker : DRUM PULSE (TP-406)

1. Adjust R414 so that the positive and negative pulses are greater than 0.7 V as shown in Fig. 3-3.



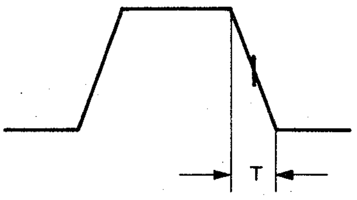
a ≧ 0.7 ± 0.1 Vp-p

Fig. 3-3

### 3.5.2 Drum DISCR. position

Mode : REC (SP mode)
Signal : Color bar
REC Select SW : AUX
Trigger of
Oscilloscope : Internal
Selector SW of
Servo Checker : DRUM SAMPLE (TP-407)

1. Set the DRUM DISCR. switch of the servo checker to the DRUM DISCR. position.
2. Adjust R535 to stabilize the sampling pulse with respect to the trapezoid as shown in Fig. 3-4. At this time, a sideways drift at the rate of less than 33 ms in 5 seconds is acceptable.
3. Set the checker DRUM DISCR. switch to NORMAL and confirm a stable sampling pulse positioned at the center of the ramp.



T = 5 to 7 ms

Fig. 3-4

### 3.5.3 Capstan DISCR. position

| Mode : | REC (SP mode) | REC (EP mode) | PB |
|---|---|---|---|
| Signal : | Color bar | Color bar | Alignment tape (MH-1M) |
| REC Select SW : | AUX | AUX | AUX |
| Select SW of Servo Checker : | CAP. SAMPLE (TP-403) | | |
| Trigger of Oscilloscope : | Internal | | TP-411 |

Table 3-5

**REC SP mode**

1. Set the CAP. DISCR. switch of the servo checker to the CAP. DISCR. position.
2. Adjust R493 to stabilize the sampling pulse with respect to the trapezoid as shown in Fig. 3-5.
3. Set the CAP. DISCR. switch to NORMAL and confirm a stable sampling pulse positioned at the center of the ramp.

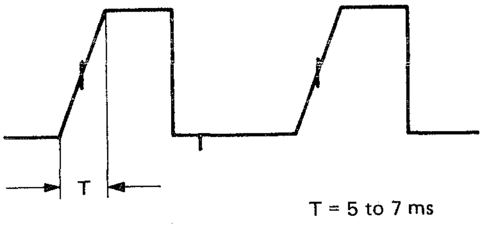


Fig. 3-5

**REC EP mode**

4. Confirm a stable sampling pulse positioned at the center of the ramp as shown in Fig. 3-5.

**PB mode**

5. Set the CAP. DISCR. switch of the servo checker to the CAP. DISCR. position.
6. Play alignment tape MY-1M and adjust R492 to stabilize the sampling pulse with respect to the trapezoid as shown in Fig. 3-5.
7. Set the CAP. DISCR. switch to NORMAL and confirm a stable sampling pulse positioned at the center of the ramp.

   **Note:** At this time, a sideways drift at the rate of less than 33 ms in 5 seconds is acceptable.

### 3.5.4 PB switching point

Mode : PB (SP mode)
Signal : Alignment tape (MH-1 Stairsteps)
Oscilloscope : VIDEO OUT
Trigger of Oscilloscope : Set the selector switch of the servo checker to DRUM FF (TP-411).

1. Set trigger slope of the oscilloscope to minus (–).
2. Adjust R415 (CH-1 SW) to position the trigger point 6.5 ± 0.5 H before V. sync as shown in Fig. 3-6.

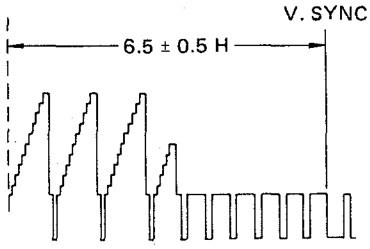


Fig. 3-6

3. Set trigger slope of the oscilloscope to plus (+).
4. Adjust R417 (CH-2 SW) to position the trigger point 6.5 ± 0.5 H before V. sync as shown in Fig. 3-7.

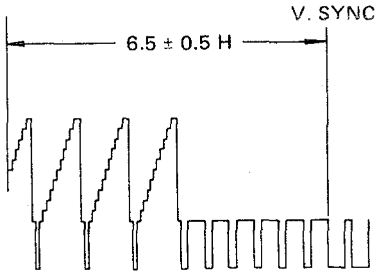


Fig. 3-7

### 3.5.5 REC switching point

Mode : REC (SP mode)
Signal : Stairsteps
Oscilloscope : VIDEO OUT
REC Select SW : AUX
Trigger of Oscilloscopw : Set the selector switch of the servo checker to DRUM FF (TP-411).

1. Set trigger slope of the oscilloscope to minus (–).
2. Adjust R430 (REC SW) to position the trigger point 6.5 ± 0.5 H before V. sync as shown in Fig. 3-6.
3. After adjusting, disconnect servo checker.

### 3.5.6 Tracking preset

Mode : REC then PB (SP mode)
Signal : Stairsteps
REC Select SW : AUX
Selector SW of Servo Checker : CTL PULSE (TP-401)
Trigger of Oscilloscope : TP-411 (A/S/M board)

1. Set the TRACKING (SLOW: R451, NORMAL: R437) control to the center click position.
2. Set trigger of the oscilloscope to minus (–) and the tracking control to the center click position.
3. Set for the Rec mode and make a note of the TP-401 (REC CTL) waveform rise point.
4. Play back the recorded segment. Adjust R435 to align the rising point of the TP-401 (PB CTL) waveform with the REC CTL waveform rise point noted in step 2, and as shown in Fig. 3-8.

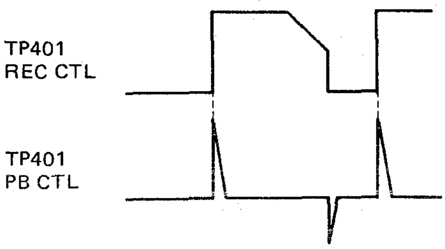


Fig. 3-8

### 3.5.7 Slow tracking preset

**Note:** Record a color bar signal first in the SP mode and then in the EP mode.

Mode : REV. 1/5th speed
Signal : Color bar
REC Select SW : AUX

#### SP mode

1. Set the TRACKING (SLOW: R451, NORMAL: R437) control to the center click position.
2. Adjust R449 (2 H PRESET) to minimize the bar noise on a monitor.
3. Confirm that the bar noise becomes in the lower 1/5th of the picture as shown in Fig. 3-9.
4. Set for the FWD 1/5th speed in the playback mode. Confirm that the specified bar noises are obtained as shown in Fig. 3-9.

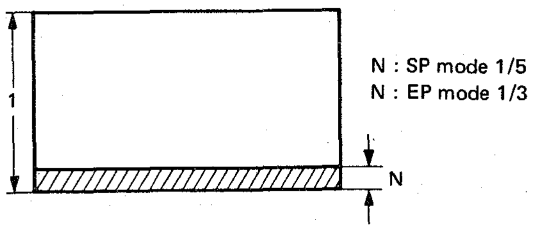


Fig. 3-9

#### EP mode

5. Set the TRACKING (SLOW: R451, NORMAL: R437) control to the center click position.
6. Adjust R450 (6 H PRESET) to minimize the bar noise on a monitor.
7. Confirm that the bar noise becomes in the lower 1/3th of the picture.
8. Set for the FWD 1/5th speed in the playback mode. Confirm that the specified bar noises are obtained as shown in Fig. 3-9.

### 3.5.8 V. pulse

Mode : STILL (PLAY + PAUSE)
Signal : Alignment tape (MH-1 Color bar)
Oscilloscope : VIDEO OUT
Trigger of Oscilloscope : TP-411

1. Observe the picture display and adjust R411 for minimum vertical jitter.
2. Confirm that the V. pulse width becomes 220 ± 30 μs.

### 3.5.9 H. discriminator (Variable Search Playback mode)

Mode : PB, STILL (PLAY + PAUSE)
Signal : Alignment tape (MH-1 Color bar)
Oscilloscope : VIDEO OUT
Trigger of Oscilloscope : Internal

#### Playback

1. Set for the Playback mode and make a note of the H. sync pulse as T μs as shown in Fig. 3-10.
2. Set for the Still mode and adjust R531 to obtain T′ = T ± 0.3 μs as shown in Fig. 3-10.

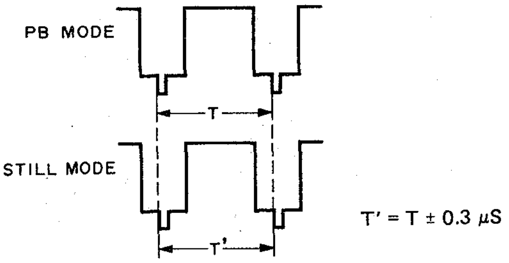


Fig. 3-10

### 3.5.10 Search tracking

**Note:** Record a color bar signal in the EP mode.

Mode : REV x1 speed, FWD x3 speed
Signal : Color bar
REC Select SW : AUX

**REV x 1 speed**

1. Set the TRACKING (SLOW: R451, NORMAL: R437) control to the center click position.
2. Adjust R446 (REV x 1) to minimize the bar noise on a monitor.

**FWD x 3 speed**

3. In the same manner as above and adjust R447 (FWD x 3).

## 3.6 VIDEO SYSTEM ADJUSTMENT ( $\boxed{0}\boxed{3}$ VIDEO board)

**Notes:** 1. Unless otherwise specified, test points and variable resistors are located on the VIDEO board. Set the dynamic aperture switch (DYAC, SW1) to the OFF position.
2. Unless otherwise specified, the input signal is applied to the VIDEO IN.

### 3.6.1 (A) Video head resonance & Q (Quality factor) ( $\boxed{1}\boxed{6}$ PREAMP board)

**Notes:** 1. Adjust both CH-1 and CH-2. The CH-2 is indicated by a rectangle ▭.
2. This adjustment is required only after replacing the upper drum (video heads).

Mode : PB (SP mode), PB (EP mode)
Signal : RF sweep
Oscilloscope : Pin 8 of IC2 (VIDEO board)

**SP mode**

1. Set for the playback mode without tape. (Refer to mechanical adjustment 2.3.1).
2. Connect a sweep generator to TP-1, $\boxed{\text{TP-2}}$.
3. Adjust C11, $\boxed{\text{C12}}$ (RESON.) for 4.6 MHz peaking, and R8, $\boxed{\text{R9}}$ (Q) so that the ratio between 1 MHz and 4.6 MHz level becomes 1 : 2 as shown in Fig. 3-11.

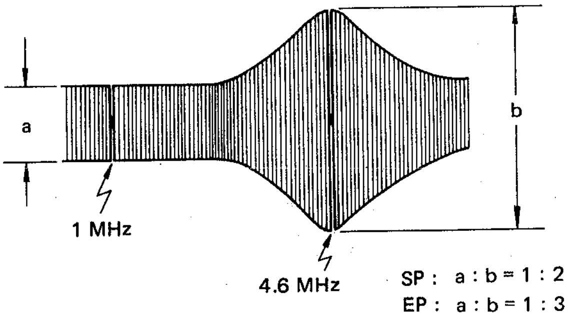


Fig. 3-11

**EP mode**

4. Perform adjustment in the same manner as SP mode CH-1, $\boxed{\text{CH-2}}$. Connect a sweep generator to TP-4, $\boxed{\text{TP-3}}$.
5. Adjust resonance with C32, $\boxed{\text{C31}}$ and Q with R26, $\boxed{\text{R25}}$.

### (B) Video head resonance & Q (Quality factor) ( $\boxed{1}\boxed{6}$ PREAMP board)

Notes: 1. This adjustment is required only after replacing the upper drum (video heads).
2. Adjust both CH-1 and CH-2. The CH-2 is indicated by a rectangle ▭.
3. The MH-1, MH-1L marker appears at 2 MHz, 4 MHz and 5 MHz, however, adjust for 4.6 MHz.

Mode : PB (SP mode), PB (EP mode)
Signal : Alignment tape (RF sweep, MH-1, MH-1L)
Oscilloscope : Pin 8 of IC2 (VIDEO board)
Trigger of Oscilloscope: TP-411 ( $\boxed{0}\boxed{4}$ A/S/M board)

**SP mode**

1. Set trigger of the oscilloscope to minus (–), $\boxed{\text{plus (+)}}$ .
2. Turn R8 (CH-1 Q), $\boxed{\text{R9 (CH-2 Q)}}$ fully counterclockwise as viewed from bottom.
3. Adjust C11, $\boxed{\text{C12}}$ to set the resonance point to 4.6 MHz as shown in Fig. 3-12.
4. If the levels of CH-1 and $\boxed{\text{CH-2}}$ differ, adjust the higher level channel to match the lower by using R8 and $\boxed{\text{R9}}$ .
5. Record a video signal; then play back and confirm absence of flicker and black-white reversal in the reproduced picture. If necessary, carefully readjust R8 and $\boxed{\text{R9}}$ .

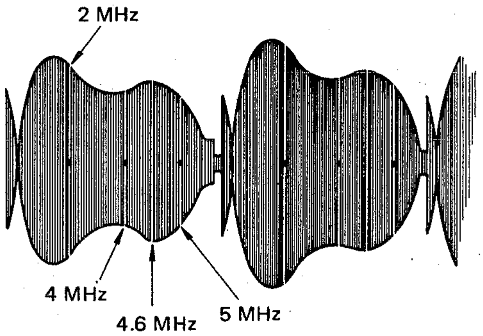


Fig. 3-12

**EP mode**

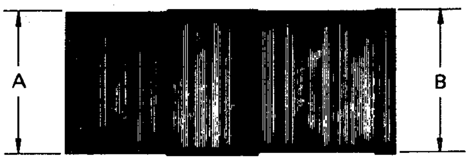
6. Perform adjustment in the same manner as for the SP mode CH-1, $\boxed{\text{CH-2}}$ . Turn R26 fully counterclockwise and $\boxed{\text{R25}}$ fully clockwise as viewed from bottom. Adjust resonance with C32, $\boxed{\text{C31}}$ and Q with R26, $\boxed{\text{R25}}$ .

### 3.6.2 PB FM channel balance

Note: Adjust both SP mode and EP mode. The EP mode is indicated by a rectangle ▭.

Mode : REC then PB (SP mode, EP mode)
Signal : Color bar
Oscilloscope : TP-6 (VIDEO board)
Trigger of Oscilloscope: TP-411 ( $\boxed{0}\boxed{4}$ A/S/M board)

1. Adjust R1, $\boxed{\text{R18}}$ to align the CH-1 and CH-2 levels as shown in Fig. 3-13.



A = B

Fig. 3-13

### 3.6.3 VXO (Variable Crystal Oscillator)

Mode : PB
Signal : Alignment tape (MH-1 Color bar)
Frequency Counter: TP-403

1. Adjust R456 to obtain 3.579545 MHz ± 50 Hz.

### 3.6.4 Video E-E level

Mode : E-E
Signal : Color bar
Oscilloscope : VIDEO OUT or TP-10
REC Select SW : AUX
SP/EP SW : SP

1. With a 75 Ω load at VIDEO OUT, adjust R56 for 0.92 ± 0.03 Vp-p as shown in Fig. 3-14.

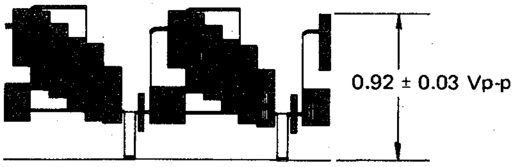


Fig. 3-14

### 3.6.5 Dynamic aperture control

**Note:** Dynamic aperture control adjustment (3.6.5) must be performed after completing video EE level (3.6.4) and before starting carrier & deviation (3.6.6).

Mode : E-E
Signal : Color sweep
Oscilloscope : TP-27
REC Select SW : AUX
DYAC : ON
SP/EP SW : SP

1. With a 75 Ω load at VIDEO OUT, connect a sweep generator to VIDEO IN.
2. Use the control of the oscilloscope to position the 100 kHz region at graduation 5 of the oscilloscope scale. Adjust R171 to position the 2 MHz portion at 4.2 to 4.7 of the oscilloscope graduations as shown in Fig. 3-15.

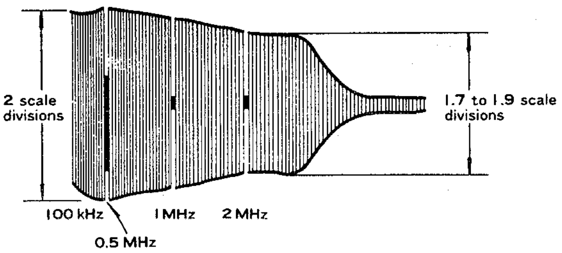


Fig. 3-15

3. After adjusting, set the DYAC SW to OFF.

### 3.6.6 Carrier and deviation

**IMPORTANT:**
**Ordinarily avoid performing this adjustment. It should be performed only if IC6 of the VIDEO board has been replaced or if significant waveform distortion and S/N deterioration occur during recording and playback due to deficient adjustment of the carrier set and deviation.**

**Note:** Before adjustment, turn R31 (DARK CLIP) fully counterclockwise and R52 (WHITE CLIP) fully clockwise so that the signal is not limited.

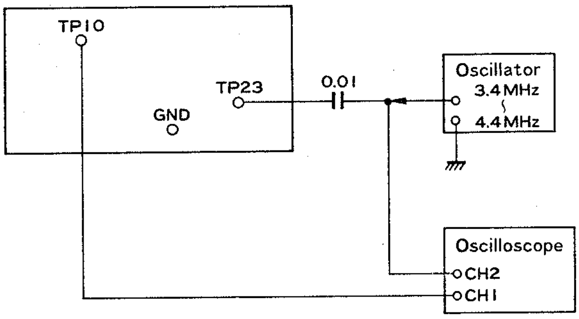


Fig. 3-16

Mode : E-E
Signal : Color bar
REC Select SW : AUX

1. Connect the equipment as shown in Fig. 3-16.
2. Set the oscilloscope to ADD mode and adjust the vertical gain of the oscilloscope and signal generator output to easily observe beat.
3. Set the signal generator for 3.4 MHz and adjust R35 (CARRIER) to set the carrier as shown in Fig. 3-17.
4. Set the signal generator for 4.4 MHz and adjust R36 (DEVIATION) to set the deviation as shown in Fig. 3-17.

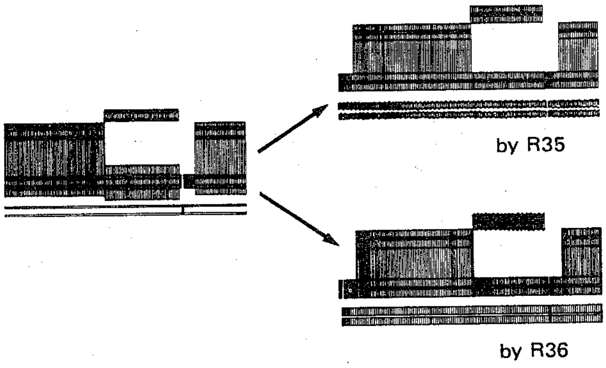
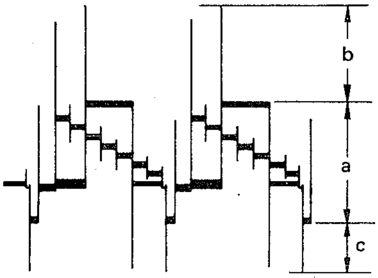


Fig. 3-17

### 3.6.7 White clip and dark clip

Mode : E-E
Signal : Color bar
Oscilloscope : TP-3
REC Select SW : AUX
SP/EP SW : SP

1. With the rated signal level taken as 100%, adjust R52 (WHITE CLIP) so that the white peak overshoot becomes 77% to 83% as shown in Fig. 3-18.
2. In the same condition, adjust R31 (DARK CLIP) so that the sync tip undershoot becomes 47% to 53% as shown in Fig. 3-18.



a : b = 100 : 77 – 83
a : c = 100 : 47 – 53

Fig. 3-18

### 3.6.8 AFC

Mode : E-E
Signal : Color bar
REC Select SW : AUX
Frequency Counter: TP-412

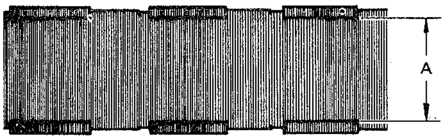
1. Connect a resistor (680 Ω) between TP-421 and TP-403.
2. Adjust R454 to obtain 629 kHz ± 5 kHz.

### 3.6.9 REC FM level

**Notes:** 1. Adjust both SP mode and EP mode. The EP mode is indicated by a rectangle $\boxed{\phantom{xxxx}}$.
2. Perform the FM audio REC level (3.7.12) adjustment after completing the REC FM level (3.6.9) adjustment.

Mode : REC (SP mode, $\boxed{\text{EP mode}}$ )
Signal : Color bar
Oscilloscope : TP-4, $\boxed{\text{TP-24}}$
REC Select SW : AUX

1. Adjust R121 (SP REC FM), $\boxed{\text{R122 (EP REC FM)}}$ so that the level of the FM waveform white component becomes 3.5 ± 0.1 Vp-p, $\boxed{\text{2.8 ± 0.1 Vp-p}}$ as shown in Fig. 3-19.



SP mode A = 3.5 ±0.1 Vp-p
EP mode A = 2.8 ±0.1 Vp-p

Fig. 3-19

### 3.6.10 REC color level and balance

**Notes:** 1. Adjust both SP mode and EP mode. The EP mode is indicated by a rectangle $\boxed{\phantom{xxxx}}$.
2. Perform the FM audio REC level (3.7.12) adjustment after completing REC color level & balance (3.6.10).

Mode : PB (SP, $\boxed{\text{EP}}$ ), REC then PB (SP, $\boxed{\text{EP}}$ )
Signal : Alignment tape (MH-1, MH-1L, Color bar)
Oscilloscope : TP-404
REC Select SW : AUX

**PB**

1. Adjust the Tracking control for maximum level of the color waveform.
2. If the levels of CH-1 and CH-2 differ, adjust R409 (SP REC COL), $\boxed{\text{R410 (EP REC COL)}}$ so that the higher level becomes 0.2 ± 0.05 Vp-p as shown in Fig. 3-20.
3. Confirm that the channel difference is within 4 dB.

**REC then PB**

**Notes:** 1. Perform the EP mode adjustment after completing the SP mode adjustment.
2. Play back the alignment tape, then play back a self-recorded tape, confirm the absence of color level reversal between channels.

4. During recording, adjust R133 (SP REC COL), $\boxed{\text{R124 (EP REC COL)}}$ so that the higher level channel 0.18 ± 0.045 Vp-p, $\boxed{\text{0.16 ± 0.04 Vp-p}}$ becomes the same during playback as shown in Fig. 3-20.
5. Confirm that the channel difference is within 4 dB.

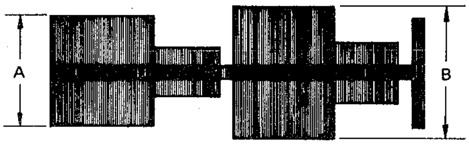


Fig. 3-20

### 3.6.11 PB Y, color level

Mode : REC then PB (SP mode)
Signal : Color bar
Oscilloscope : VIDEO OUT or TP-10
REC Select SW : AUX

1. With a 75 Ω load at VIDEO OUT, adjust R76 for a luminance signal level of 0.92 ± 0.03 Vp-p.
2. Adjust R464 for a burst level of 0.27 ± 0.05 Vp-p as shown in Fig. 3-21.

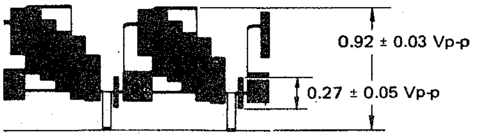
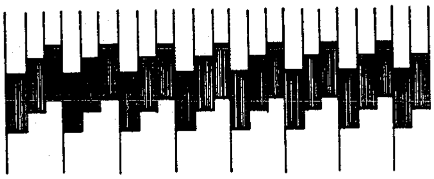


Fig. 3-21

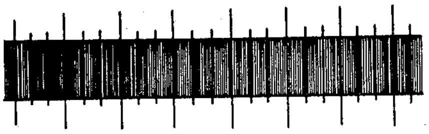
### 3.6.12 NR adj.

Mode : REC then PB (EP mode)
Signal : Stairsteps
Oscilloscope : TP-21
REC Select SW : AUX

1. Adjust R71 to minimize the waveform as shown in Fig. 3-22.



INCORRECT



CORRECT

Fig. 3-22

### 3.6.13 Converter balance

Mode : REC then PB
Signal : Color bar
Oscilloscope : TP-401
REC Select SW : AUX
Trigger of
Oscilloscope : (TP-411) (A/S/M board)

1. Adjust R441 for minimum leakage of the 4.2 MHz component as shown in Fig. 3-23.

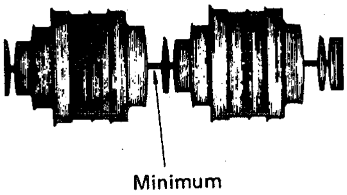


Fig. 3-23

### 3.6.14 Sharpness preset

Mode : E-E
Signal : Color sweep
Oscilloscope : CH1 : Q18 (base), CH2 : TP-26
REC Select SW : AUX

1. Set the SHARPNESS (R561) control to the center click position and connect a sweep generator to VIDEO IN.
2. Set oscilloscope to the ALT mode and adjust the vertical gain of the oscilloscope to obtain the same level for the CH1 and CH2 waveforms. Set both input channels of the oscilloscope to ground (earth) and adjust the vertical position controls to obtain a single horizontal line at the center.
3. Set both input channels of the oscilloscope to AC and observe 2 MHz levels of Q18 and TP26. Make a note of this as 2 MHz level of Q18 "A".
4. If not within A + 0.8 to 1.2 dB, adjust R110 (PRESET) as shown in Fig. 3-24.

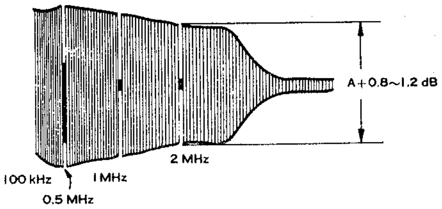


Fig. 3-24

### 3.6.15 REC FM EQ

Mode : REC then PB (SP mode)
Signal : Color sweep
Oscilloscope : VIDEO OUT or TP-10
REC Select SW : AUX
Trigger of
Oscilloscope : (TP-411) (A/S/M board)

1. Connect a sweep generator to VIDEO IN and use the control of the oscilloscope to position the 100 kHz region at graduation 5 of the oscilloscope scale. Adjust R5 to position the 2 MHz portion at 2.8 to 3.5 of the oscilloscope graduations as shown in Fig. 3-25.
2. Confirm channel difference within 2 dB.
3. If the above conditions are not fulfilled, adjust the higher level channel to match the lower by using R8 and R9 of the PRE AMP board.

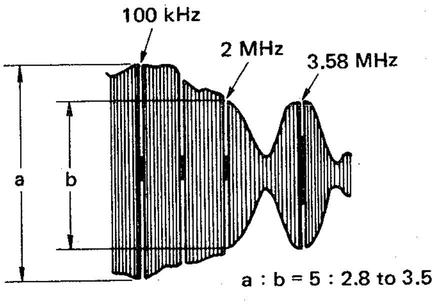


Fig. 3-25

## 3.7 AUDIO SYSTEM ADJUSTMENTS

**Note:** Adjust both CH-1 and CH-2. The CH-2 is indicated by rectangle.

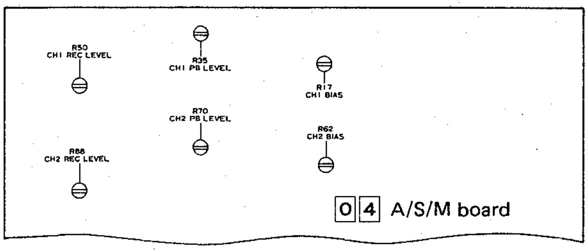


Fig. 3-26

### 3.7.1 Audio PB level ( $\boxed{0}\boxed{4}$ A/S/M board)

Mode : PB
Signal : Alignment tape (MH-1 1 kHz)
Oscilloscope : MIXING AUDIO OUT CH-1(L), $\boxed{\text{CH-2(R)}}$
AUDIO OUT
Monitor SW : L/R
NR SW : OFF

1. Set the AUDIO OUT MONITOR (R150) control to the NORMAL position.
2. Adjust R35, $\boxed{\text{R70}}$ of the A/S/M board for –8 dB ± 1 dBs (0.78 to 0.98 Vp-p) at AUDIO MIX OUT, CH-1(L), $\boxed{\text{CH-2(R)}}$ as shown in Fig. 3-27.

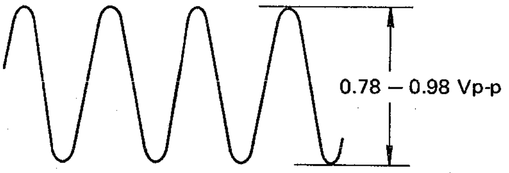


Fig. 3-27

### 3.7.2 Audio bias level ( $\boxed{0}\boxed{4}$ A/S/M board)

Mode : REC (EP mode)
Signal : No signal
Digital Voltmeter : Both sides of R1, $\boxed{\text{R2}}$ of the A/C HEAD board
REC Select SW : AUX

1. Adjust R17, $\boxed{\text{R62}}$ of the A/S/M board for 2.4 ± 0.1 mV.
2. Confirm that the bias level becomes 3.1 ± 0.2 mV during recording with SP mode.

### 3.7.3 REC level ( $\boxed{0}\boxed{4}$ A/S/M board)

Mode : REC then PB (SP mode)
Signal : 1 kHz –8 dBs, VIDEO: Color bar
Oscilloscope : MIXING AUDIO OUT CH-1(L), $\boxed{\text{CH-2(R)}}$
AUDIO OUT
Monitor SW : L/R
NR SW : OFF
REC Select SW : AUX

1. Set the AUDIO OUT MONITOR (R150) control to the NORMAL position.
2. Adjust R50, $\boxed{\text{R88}}$ before recording so that the level becomes –6 ±1 dBs (0.98 to 1.23 Vp-p) when playback.

### 3.7.4 REC/PB frequency response ( $\boxed{0}\boxed{4}$ A/S/M board)

Mode : REC then PB (SP mode, EP mode)
Signal : 1 kHz, 100 Hz, 10 kHz, –18 dBs (SP mode), VIDEO: Color bar
1 kHz, 100 Hz, 6 kHz, –18 dBs (EP mode), VIDEO: Color bar
Oscilloscope : MIXING AUDIO OUT CH-1(L), $\boxed{\text{CH-2(R)}}$
NR SW : ON
AUDIO OUT
Monitor SW : L/R
REC Select SW: AUX

**SP mode**

1. Set the 1 kHz level for 0 dB reference signal and confirm frequency response as shown in in Fig. 3-28.

**EP mode**

2. In the same manner as SP mode, confirm the frequency response (Fig. 3-29).
3. If the above conditions are not fulfilled, adjust R17 (CH-1 BIAS), $\boxed{\text{R62 (CH-2 BIAS)}}$ of the A/S/M board to obtain 2.7 to 3.6 mV in the SP mode and 2.0 to 2.9 mV in the EP mode.

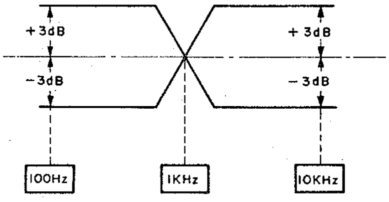


Fig. 3-28

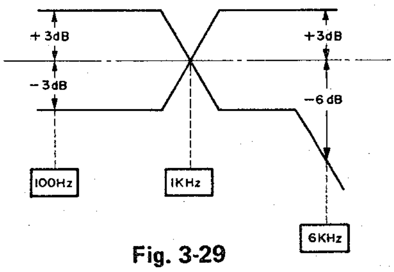


Fig. 3-29

### 3.7.5 FM audio switching point ($\boxed{0}\boxed{5}$ FMA board)

Mode : Rec then PB (SP mode)
Signal : No signal, VIDEO : Color bar
REC Select SW : AUX
Trigger of Oscilloscope : TP-28 (VIDEO board)
Oscilloscope : TP-3 (Vertical: 100 mV/DIV., Horizontal: 1 mS/DIV.)

1. Set trigger of the oscilloscope to plus (+).
2. Turn R172 of the FMA board counterclockwise as viewed from the bottom to where the FM signal indicates absence. This becomes point (A) as shown in Fig. 3-30.
3. Turn R172 of the FMA board clockwise as viewed from the bottom to where the FM signal indicates absence. This becomes point (B) as shown in Fig. 3-30.
4. Adjust R172 so that the switching point position becomes at the center of (A) and (B) as shown in Fig. 3-30.

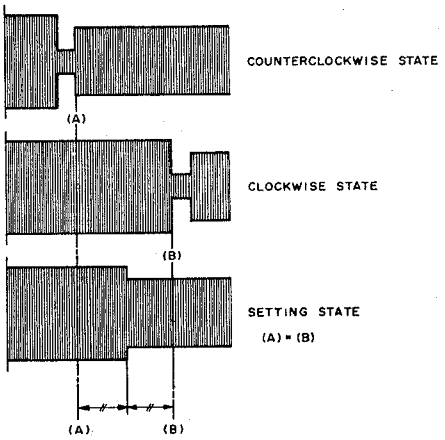


Fig. 3-30

5. Set trigger of the oscilloscope to minus (–).
6. In the same manner as above steps 2 to 4, adjust R175.

### 3.7.6 FM PB level ( $\boxed{0}\boxed{5}$ FMA [FM AUDIO] board)

Mode : PB
Signal : Alignment tape (1 kHz ± 50 kHz deviation), MH-7
Oscilloscope : MIXING AUDIO OUT CH-1(L), $\boxed{\text{CH-2(R)}}$
NR SW : OFF

1. Set the AUDIO OUT MONITOR (R150) control to the Hi-Fi position.
2. Adjust R126 (CH-1 PB LEV, $\boxed{\text{R154 (CH-2 PB LEV)}}$ of the FMA board for –6 ± 0.5 dBs (1.04 to 1.17 Vp-p).

### 3.7.7 Indicator level ( $\boxed{0}\boxed{5}$ FMA board)

Mode : E-E
Signal : 1 kHz at –8 dBs
Audio Limiter SW: OFF
REC Select SW : AUX

1. Set the AUDIO OUT MONITOR (R150) control to the NORMAL position.
2. Adjust HIFI REC level control to obtain –6 dBS (1.1 Vp-p) at AUDIO MIX OUT (L, R).
3. Adjust R77 (CH-1 LEV ADJ), $\boxed{\text{R76 (CH-2 LEV ADJ)}}$ to illuminate green LED (1 to 8) indication on the level meter as shown in Fig. 3-31.

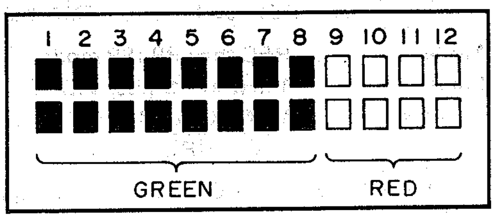


Fig. 3-31

### 3.7.8 E-E level ( $\boxed{0}\boxed{5}$ FMA board)

Mode : E-E
Signal : 1 kHz at –8 dBs
Oscilloscope : MIXING AUDIO OUT CH-1(L), $\boxed{\text{CH-2(R)}}$
AUDIO OUT Monitor SW : L/R
REC Select SW : AUX

1. Set the AUDIO OUT MONITOR (R150) control to the NORMAL position.
2. Adjust R24 (CH-1 E-E), $\boxed{\text{R25 (CH-2 E-E)}}$ of the FMA board for –6 ± 0.5 dBs (1.04 to 1.17 Vp-p).

### 3.7.9 FM audio E-E level ( $\boxed{0}\boxed{5}$ FMA board)

Mode : E-E
Signal : 1 kHz at –8 dBs
Oscilloscope : AUDIO MIX OUT CH-1(L), $\boxed{\text{CH-2(R)}}$
Audio Limiter SW: ON
REC Select SW : AUX

1. Set the AUDIO OUT MONITOR (R150) control to the Hi-Fi position.
2. Adjust R30 (CH-1 FMA E-E), $\boxed{\text{R31 (CH-2 FMA E-E)}}$ of the FMA board for –6 ± 0.5 dBs (1.04 to 1.17 Vp-p).

### 3.7.10 FM carrier frequency ( $\boxed{0}\boxed{5}$ FMA board)

Mode : E-E
Signal : No signal
Frequency Counter: CH-1: TP-9 (1.3 MHz),
CH-2: TP-10 (1.7 MHz)
REC Select SW : AUX

1. Adjust R114 (CH-1 CARRIER ADJ) of the FMA board for 1.3 MHz ± 5 kHz.
2. Adjust R143 (CH-2 CARRIER ADJ) of the FMA board for 1.7 MHz ± 5 kHz.

### 3.7.11 FM audio signal REC level ( $\boxed{0}\boxed{5}$ FMA board)

Mode : REC then PB (SP mode)
Signal : 1 kHz at –8 dBs, VIDEO : Color bar
Oscilloscope : MIXING AUDIO OUT CH-1(L),
CH-2(R)

1. Set the AUDIO OUT MONITOR (R150) control to the Hi-Fi position.

3. Adjust R108 (CH-1 REC DEV.), R137 (CH-2 REC DEV.) of the FMA board before recording so that the level becomes –6 ± 1 dBs (0.98 to 1.23 Vp-p) when playback.

### 3.7.12 FM audio REC level ( $\boxed{0}\boxed{5}$ FMA board)

**Note:** Perform the following steps only after completing item 3.6.9 "REC FM Level", 3.6.10 "REC Color Level" & channel balance.

Mode : REC (SP mode)
Signal : No signal
Oscilloscope : TP-1 (FMA board),
V : 20 mV/DIV
H : 0.5 μs/DIV
REC Select SW : AUX

1. Turn R117 (1.3 MHz REC LEV) and R146 (1.7 MHz REC LEV) of the FMA board fully counterclockwise ( ↺ ) as viewed from bottom.
2. Referring to Fig. 3-32, gradually turn R117 (1.3 MHz REC LEV) ( ↻ ) of the FMA board clockwise to obtain 20 mVp-p of the 1.3 MHz component.

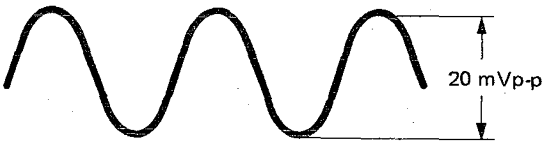


Fig. 3-32

3. Referring to Fig. 3-33, gradually turn R146 (1.7 MHz REC LEV) ( ↻ ) of the FMA board clockwise to obtain 60 mVp-p of the mixed waveforms (1.3 MHz and 1.7 MHz).

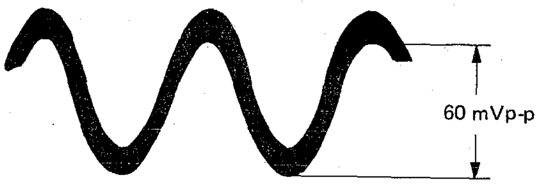


Fig. 3-33

## 3.8 TUNER/TIMER SYSTEM ADJUSTMENT ( 0 9 TUNER/TIMER board)

### 3.8.1 Timer control clock

Mode : E-E
Signal : No signal
Frequency Counter: TP-1 (TUNER/TIMER board)

1. Adjust C6 for 4.194304 MHz.

## 3.9 TUNER/IF SYSTEM ADJUSTMENTS ( 0 7 TUNER/IF board)

**Note:** Unless otherwise specified, test points and variable resistors are located on the TUNER/IF board.

### 3.9.1 4.5 MHz adj.

Mode : Tuner
Signal : TV broadcast (VHF 7 to 10)
Frequency Counter: Pin 17 of IC1

1. Adjust C44 for 45.75 MHz.

### 3.9.2 Noise

**Note:** Adjust R11 (NOISE) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electric fields.

Mode : Tuner
Signal : TV broadcast

1. Adjust R11 to minimize noise or streaks on the TV screen.
2. Check for absence of abnormality on all channels.

### 3.9.3 AFC

Mode : Tuner
Signal : TV broadcast
Oscilloscope: TP-12

1. Receive a color broadcast corresponding to band VHF 7 to 10.
2. With AFC SW to OFF, perform fine tuning.
3. Then, precisely read the burst level of TP-12. Make a note of this as level "a" Vp-p.
4. When AFC SW is ON, adjust T3 (AFC) so that the burst level of TP-12 becomes equal to "a" Vp-p as shown in Fig. 3-34.

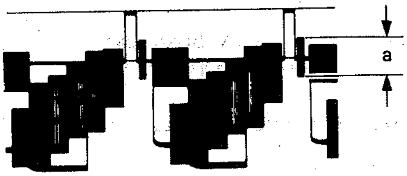


Fig. 3-34

### 3.9.4 Color level 1

Mode : Tuner
Signal : Color bar
Oscilloscope: TP-12

1. Supply a color bar signal of 7 to 10 VHF channel from a TV channel signal generator and select the channel corresponding to the generator.

2. With AFC SW ON, adjust R21 (COLOR LEVEL 1) to satisfy as shown in Fig. 3-35.

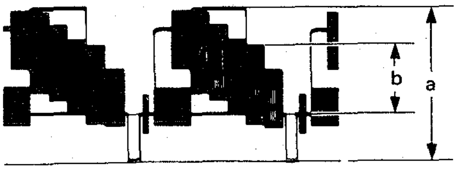


Fig. 3-35 a : b = 1 : 0.25

**Alternate method**

Mode : Tuner
Signal : TV broadcast
Oscilloscope: TP-12

1. Receive a color broadcast corresponding to band VHF 7 to 10.
2. With AFC SW ON, adjust R21 (COLOR LEVEL 1) so that the burst level becomes 1/3 of the sync level.

### 3.9.5 Color level 2

Mode : Tuner
Signal : Color bar
Oscilloscope: TP-13

1. Supply a color bar signal of 7 to 10 VHF channel from a TV channel signal generator and select the channel corresponding to the generator.
2. With AFC SW ON, adjust R34 (COLOR LEVEL 2) to satisfy as shown in Fig. 3-36.

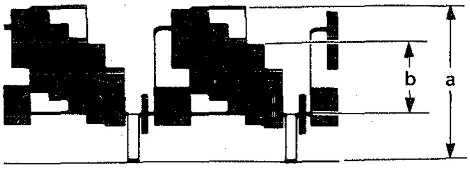


Fig. 3-36 a : b = 1 : 0.45

**Alternate method**

Mode : Tuner
Signal : TV broadcast
Oscilloscope: TP-13

1. Receive a color broadcast corresponding to band VHF 7 to 10.
2. With AFC SW ON, adjust R34 (COLOR LEVEL 2) so that the burst level becomes 2/3 of the sync level.

### 3.9.6 Audio output level

Mode : Tuner
Signal : 1 kHz
Oscilloscope: TP-22

1. Supply a video signal and 1 kHz audio RF signal of VHF channel 7 to 10 from a TV channel signal generator and select the channel corresponding to the generator.
2. Adjust R27 (AUDIO LEVEL) for −17 dBs (0.31 Vp-p).

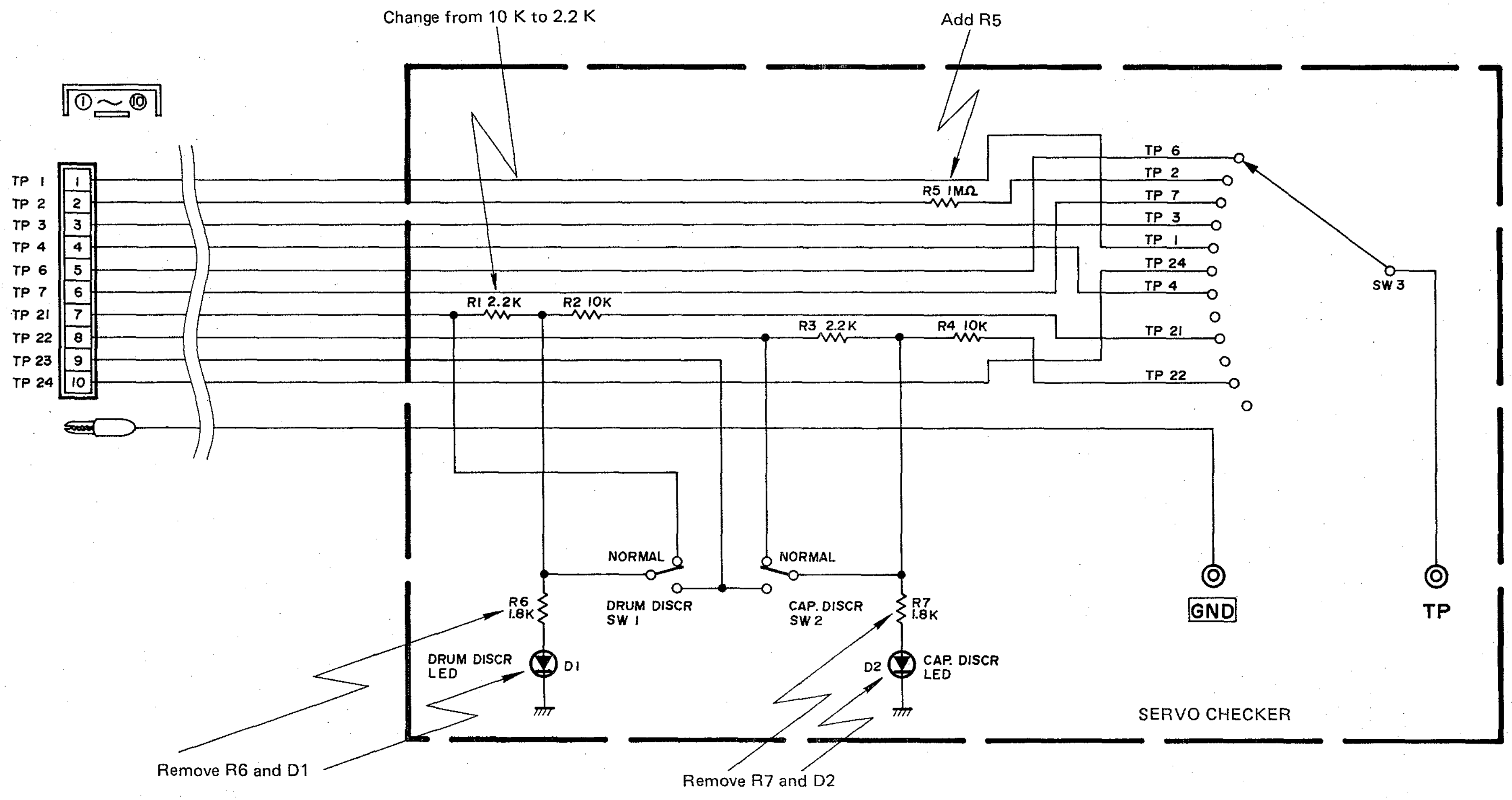

Change from 10 K to 2.2 K
Add R5
①～⑩
TP 1
TP 2
TP 3
TP 4
TP 6
TP 7
TP 21
TP 22
TP 23
TP 24
1
2
3
4
5
6
7
8
9
10
R5 1MΩ
R1 2.2K
R2 10K
R3 2.2K
R4 10K
TP 6
TP 2
TP 7
TP 3
TP 1
TP 24
TP 4
TP 21
TP 22
SW 3
NORMAL
NORMAL
R6 1.8K
DRUM DISCR SW 1
CAP. DISCR SW 2
R7 1.8K
GND
TP
DRUM DISCR LED
D1
D2
CAP. DISCR LED
SERVO CHECKER
Remove R6 and D1
Remove R7 and D2

Fig. 3-37

# SECTION 4
# CHARTS AND DIAGRAMS

## 4.1 KEY TO ABBREVIATIONS

**A**
AC : Alternating Current
ACC : Automatic Color Control
A/CTL : Audio/Control
ADD : Adder
ADC : Analog to Digital Converter
ADJ : Adjustment
A DUB : Audio Dub
AE : Audio Erase
AEF : Automatic Editing Function
AFC : Automatic Frequency Control
AFT : Automatic Fine Tuning
AGC : Automatic Gain Control
AH : Audio Head
AHD : Audio High Density
AL : After Loading
ALC : Automatic Ligh Compensation
Automatic Level Control
A/S/M : Audio/Servo/Mechacon
ALM : Alarm
ALU : Arithmetic Logic Unit
AM : Amplitude Modulation
AMP : Amplifier
ANT : Antenna
APC : Automatic Pedestal Control
Automatic Phase Control
APL : Average Picture Level
ASS'Y : Assembly
ATT : Attenuator
AUTO : Automatic
AUX : Auxiliary
AUD : Audio

**B**
B : Base
BAL : Balance
BATT : Battery
BBD : Bucket Brigade Device
BCD : Binary Coded Decimal
BEG : Beginning
BFP : Burst Flag Pulse
BUFF : Buffer
BIT : Binary Digit
BLK : Black
BLU : Blue
BNC : Bayonet Connector
BOT : Beginning of Tape
BPF : Bandpass Filter
BRK : Brake
BRN : Brown
BRT : Brightness
BT : Band Tuning
BW or B/W : Black and White

**C**
C : Capacitance
CAP : Capstan
CAR : Carrier
CASS : Cassette
CCT : Circuit
CdS : Cadmium Sulphide
CD : Countdown
CF : Ceramic Filter, Color Frame
CC : Cassette Compartment
CE : Chip Enable
CH : Channel
CHG : Charge
CHROMA : Chrominance
CLK : Clock
CLR : Clear
CMOS : Complementary Metal Oxide Silicon
CMD : Command
CNT : Count, Counter
CONV : Converter
COL : Color
COM : Common
COMB : Combination
Comb Filter
COMP : Comparator
Composite
Compensation
CONN : Connector
CPC : Capstan Phase Control
CTC : Crosstalk Cancel
CPU : Central Processing Unit
CTL : Control

**D**
D : Drum
DAC : Digital to Analog Converter
dB : Decibel
DC : Direct Current
DD : Direct Drive
DEC : Decoder
DEMOD : Demodulator
DEMUX : Demultiplexer
DET : Detector
DEV : Deviation
DFRS : Drum Free RUN STOP
DIF TRANS : Differential Transformer
DISCR : Discriminator
DL : Delay Line
DOC : Dropout Compensator
DPC : Drum Phase Control
DYAC : Dynamic Aperture Control

**E**
E : Edit
EDP : Electronic Data Processing
E-E : Electric to Electric
EF : Emitter-Follower
EMP : Emphasis
ENC : Encoder
EN : Enable
ENV : Envelope
EOT : End of Tape
EP : Extended Play
EQ : Equalizer
ES : Electronic Switch
ESNS : End Sensor
EXP : Expander
EXT : External

**F**
F : Farad
F ADV : Frame Advance
FDP : Fluorescent Display Panel
FE : Full Erase
FET : Field Effect Transistor
FF : Fast Forward
Flipflop
FG : Frequency Generator
FM : Frequency Modulation
FMA : FM Audio
FR : Full Recording, Frame
FREQ : Frequency
F-V CONV : Frequency to Voltage Converter
FWD : Forward
FWD S : Forward Search

**G**
G : Green
GEN : Generator
GND : Ground
GRN : Green
GRY : Gray

**H**
H : High
HBF : Horizontal Burst Flag
HD : Horizontal Drive
HG : Hall Generator
HPF : Highpass Filter
Hz : Herz

**I**
IC : Integrated Circuit
ID : Identification (Pulse)
IF : Intermediate Frequency
IFR : Infrared
IFT : Intermediate Frequency Transfomer

IND : Indicator
INH : Inhibit
INS : Insert
INT : Internal, Interrupt
INV : Inverter
I/O : Input/Output
IR : Infrared

**L**
L : Low
LED : Light Emitting Diode
LIN : Linearity
LIM : Limiter
LOAD : Loading (Cassette)
LP : Long Play
LPF : Lowpass Filter
LSB : Lower Sidedband

**M**
M : Motor
MAX : Maximum
MDA : Motor Drive Amplifier
MECHACON : Mechanism Control
MIC : Microphone
MIN : Minimum
MIX : Mixer
MMV : Monostable Multivibrator
MOD : Modulation
MODEM : Modulator-Demodulator
MON : Monitor
MOS : Metal Oxide Silicon
MPX : Multiplexer
MS : Mode Select
MUT : Muting

**N**
NAND : Not-And
NC : Not Connected
NFB : Negative Feedback
NLN : Non-Linear
NO : Normally Open
NOR : Normal

**O**
OPAMP : Operational Amplifier
OP : Operation
ORN : Orange
OSC : Oscillator

**P**
PB : Playback
PC : Photocoupler, Pulse Counter
PCM : Pulse Code Modulation
PGM : Program
PG : Pulse Generator
PI : Photo Interrupter
PLL : Phase Locked Loop
p-p : Peak-to-Peak
POS : Position
PR : Pinch Roller
PREAMP : Preamplifier
PRL : Preroll
P/S : Pause/Still
PSC : Pulse Swallowing Control
PU : Pickup
PWB : Printed Wiring Board
PWM : Pulse Width Modulation
PWR : Power

**Q**
Q : Quality Factor

**R**
R : Red
RA : Resistor Array
RAM : Random Access Memory
REC : Recording
REG : Regulated
REM : Remote
REMOCON : Remote Control (Unit)
REV : Reverse
REV S : Reverse Search
REW : Rewind
RF : Radio Frequency
RS FF : RS Flipflop
RST : Reset
R/P : Record/Playback
RPT : Repeat
RT : Rotary Transformer
RUN : Running
RY : Relay

**S**
SC : Subcarrier, Simulcast
SAW : Sawtooth
SCH : Search
SEL : Select
SENS : Sensor
SEP : Separator
SF : Source Follower
SFF : Short Fast Forward
SIF : Sound Intermediate Frequency
SN : Signal to Noise Ratio
SOL : Solenoid
SOS : Sound on Sound
SP : Standard Play
SR : Supply Reel
SREW : Short Rewind
S/S : Slow/Still
SSG : Sync Signal Generator
SSNS : Start Sensor
STD : Strobe Data
SUP : Supply
SW : Switch
SWD : Switched
SYNC : Synchronization
SYSCON : System Control

**T**
TBC : Time Base Corrector
TP : Test Point
TPZD : Trapezoid
TR : Transistor; Transformer
TU : Take-Up
TC : Tension Control, Time code
TAL : Tally
TEN : Tension
TK : Tracking
TIM : Timing
T/T : Tuner/Timer

**U**
UL : Unloading
UNREG : Unregulated
UNSW : Unswitched

**V**
V : Volt
V : Volt
VACT : Video Action
VCO : Voltage Controlled Oscillator
VD : Vertical Drive
VIF : Video Intermediate Frequency
VR : Variable Resistor
VS : Video and Sync
VXO : Variable Crystal Oscillator
VLT : Violet
V/T : Video/Television
V/U : VHF/UHF
VSCH : Variable Search

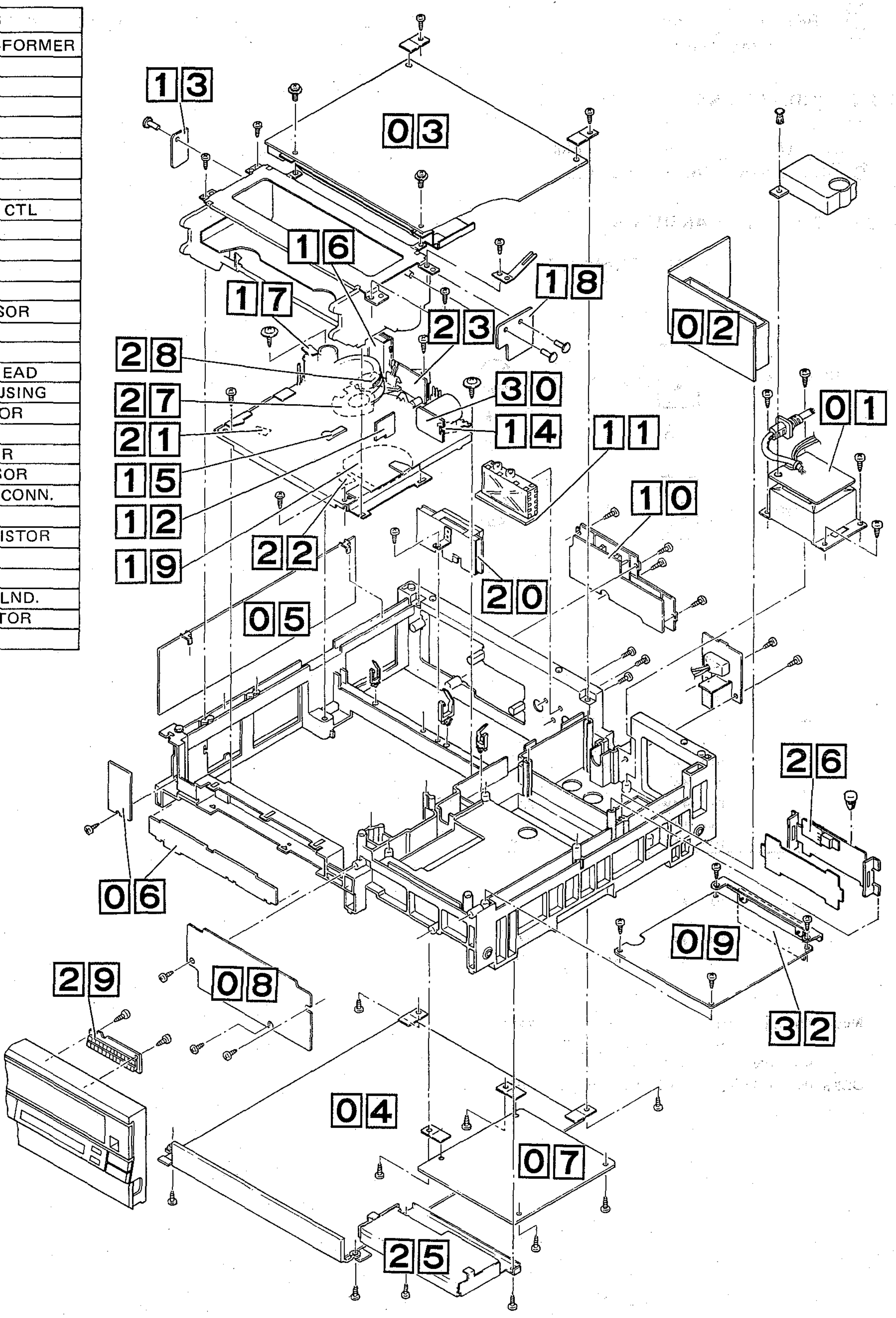
**W**
W : Watt
WHT : White
WV : Working Voltage
W & D : White and Dark
WARN : Warning

**X**
XTAL : Crystal

**Y**
Y : Luminance
YEL : Yellow

## 4.2 CIRCUIT BOARD LOCATIONS

| No. | NAMES |
|---|---|
| 01 | POWER TRANSFORMER |
| 02 | REGULATOR |
| 03 | VIDEO |
| 04 | A/S/M |
| 05 | FM AUDIO |
| 06 | OPERATION |
| 07 | TUNER/IF |
| 08 | DISPLAY |
| 09 | TUNER/TIMER CTL |
| 10 | TERMINAL |
| 11 | RF SWITCH |
| 12 | A/CTL HEAD |
| 13 | END SENSOR |
| 14 | LOADING SENSOR |
| 15 | LED |
| 16 | PREAMP |
| 17 | FULL ERASE HEAD |
| 18 | CASSETTE HOUSING |
| 19 | CAPSTAN MOTOR |
| 20 | DRUM MDA |
| 21 | SUPPLY SENSOR |
| 22 | TAKE. UP SENSOR |
| 23 | DRUM MOTOR CONN. |
| 25 | PROGRAM |
| 26 | POWER TRANSISTOR |
| 27 | DRUM FG |
| 28 | DRUM MOTOR |
| 29 | AUDIO LEVEL LND. |
| 30 | MODE CTL MOTOR |
| 32 | TIMING |


13
03
16
17
18
23
02
28
30
01
27
21
14
11
15
10
12
22
19
20
05
26
06
09
29
08
32
04
07
25

### 4.2.1 CONNECTIONS

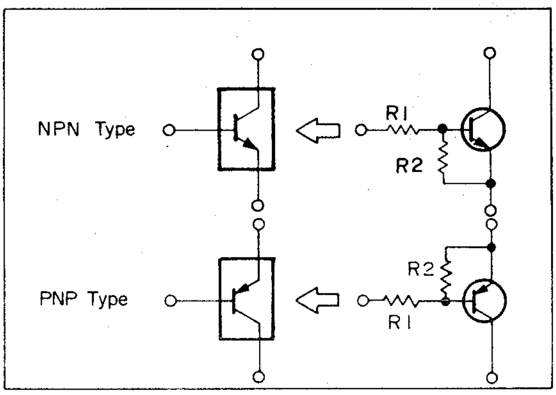
⊡ : Connector
○ : Board
□ : Board in connector
⬭ : Connected pattern in the board.

### 4.2.2 INDICATIONS

COUNT UP : Active only at high.
$\overline{\text{COUNT DOWN}}$ : Active only at low.

### 4.2.3 DIGITAL TRANSISTOR

DIGITAL TRANSISTOR



RESISTOR VALUES

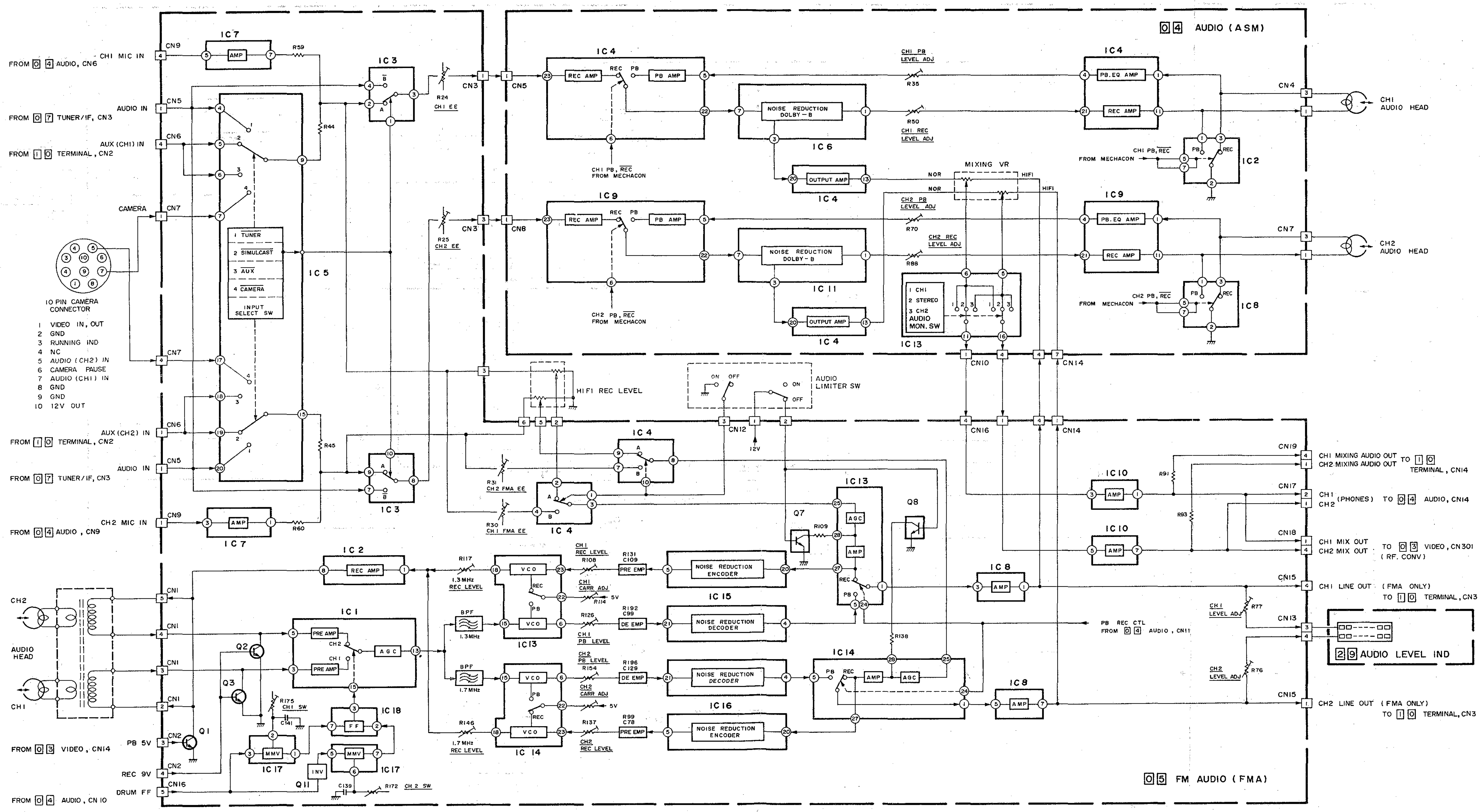
| JUNCTION | Part NO. | R1 (KΩ) | R2 (KΩ) |
|---|---|---|---|
| PNP | DTA114 | 10 | 10 |
| | DTA124 | 22 | 22 |
| | DTA144 | 47 | 47 |
| | DTA144WF | 47 | 22 |
| | DTA114Y | 10 | 47 |
| | DTA114T | 10 | OPEN |
| NPN | DTC114 | 10 | 10 |
| | DTC124 | 22 | 22 |
| | DTC144 | 47 | 47 |
| | DTC144WT | 47 | 22 |
| | DTC114Y | 10 | 47 |
| | DTC143T | 4.7 | OPEN |

**Note:** The digital transistor includes built in resistors.
It features small size and high rellability.
Both PNP and NPN types are available.
**USES:** INVERTER, INTERFACE, DRIVER CIRCUITS.

### 4.2.4 SIGNAL FLOW IN THE SCHEMATIC

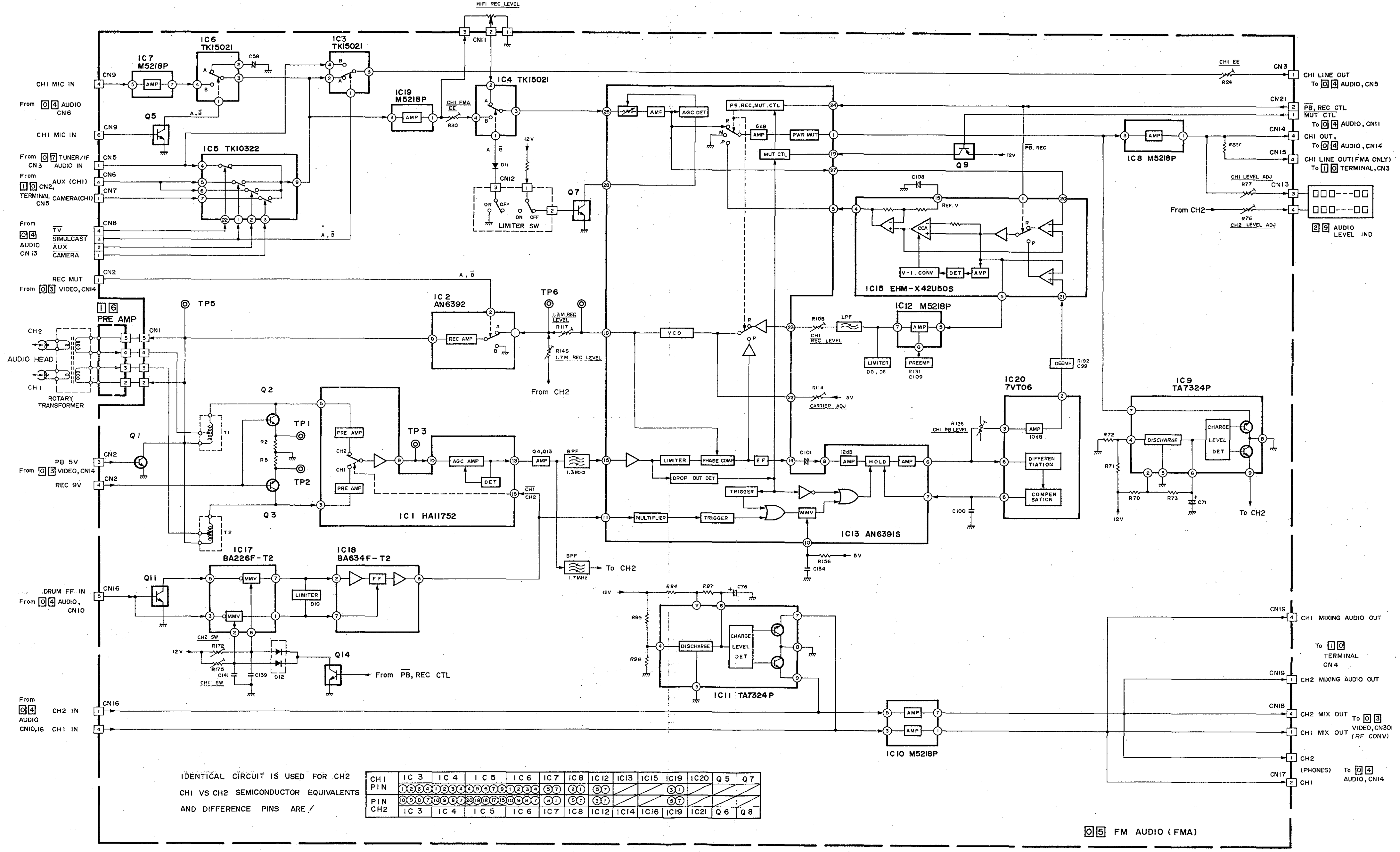
——————→ Recording signal path
– – – – – – → Playback signal path
———·——→ REC/PB signal path

## 4.3 OVERALL AUDIO BLOCK DIAGRAM



04 AUDIO (ASM)
05 FM AUDIO (FMA)
FROM 04 AUDIO, CN6
CH1 MIC IN
FROM 07 TUNER/IF, CN3
AUDIO IN
FROM 10 TERMINAL, CN2
AUX (CH1) IN
CAMERA
10 PIN CAMERA CONNECTOR
1 VIDEO IN, OUT
2 GND
3 RUNNING IND
4 NC
5 AUDIO (CH2) IN
6 CAMERA PAUSE
7 AUDIO (CH1) IN
8 GND
9 GND
10 12V OUT
FROM 10 TERMINAL, CN2
AUX (CH2) IN
FROM 07 TUNER/IF, CN3
AUDIO IN
FROM 04 AUDIO, CN9
CH2 MIC IN
CN9
CN5
CN6
CN7
IC7
AMP
R59
R60
IC3
R44
R45
IC5
1 TUNER
2 SIMULCAST
3 AUX
4 CAMERA
INPUT SELECT SW
R24
CH1 EE
R25
CH2 EE
CN3
CN5
CN8
IC4
REC AMP
PB AMP
REC
PB
CH1 PB, REC
FROM MECHACON
IC9
CH2 PB, REC
FROM MECHACON
NOISE REDUCTION DOLBY-B
IC6
IC11
OUTPUT AMP
CH1 PB LEVEL ADJ
R35
R50
CH1 REC LEVEL ADJ
CH2 PB LEVEL ADJ
R70
CH2 REC LEVEL ADJ
R88
MIXING VR
NOR
HIFI
1 CH1
2 STEREO
3 CH2
AUDIO MON. SW
IC13
PB.EQ AMP
CN4
CH1 AUDIO HEAD
CN7
CH2 AUDIO HEAD
FROM MECHACON
IC2
IC8
CN10
CN14
HIFI REC LEVEL
ON OFF
AUDIO LIMITER SW
CN12
12V
CN16
R31
CH2 FMA EE
R30
CH1 FMA EE
IC10
R91
R93
CN19
CH1 MIXING AUDIO OUT
CH2 MIXING AUDIO OUT
TO 10 TERMINAL, CN14
CN17
CH1
CH2
(PHONES) TO 04 AUDIO, CN14
CN18
CH1 MIX OUT
CH2 MIX OUT
TO 03 VIDEO, CN301 (RF. CONV)
CN15
CH1 LINE OUT (FMA ONLY)
TO 10 TERMINAL, CN3
CN13
29 AUDIO LEVEL IND
CH1 LEVEL ADJ
R77
CH2 LEVEL ADJ
R76
CH2 LINE OUT (FMA ONLY)
TO 10 TERMINAL, CN3
Q7
Q8
R109
AGC
R138
PB REC CTL
FROM 04 AUDIO, CN11
IC14
IC15
IC16
NOISE REDUCTION ENCODER
NOISE REDUCTION DECODER
PRE EMP
DE EMP
R131 C109
R192 C99
R196 C129
R99 C78
CH1 REC LEVEL R108
CH1 CARR ADJ R114
5V
R126
CH1 PB LEVEL
CH2 PB LEVEL R154
CH2 CARR ADJ
R137
CH2 REC LEVEL
VCO
IC13
IC14
R117
1.3MHz REC LEVEL
BPF
1.3MHz
1.7MHz
R146
1.7MHz REC LEVEL
IC2
REC AMP
IC1
PRE AMP
CH2
CH1
AGC
CH2
AUDIO HEAD
CH1
CN1
CN2
Q1
Q2
Q3
Q11
INV
IC17
IC18
MMV
FF
R175
CH1 SW
C141
C139
R172 CH 2 SW
FROM 03 VIDEO, CN14
PB 5V
REC 9V
DRUM FF
FROM 04 AUDIO, CN10

## 4.4 FM AUDIO BLOCK DIAGRAM


HIFI REC LEVEL
CN11
IC7 M5218P
IC6 TK15021
C58
IC3 TK15021
IC4 TK15021
IC19 M5218P
CH1 FMA EE
R30
AMP
CH1 MIC IN
CN9
From 04 AUDIO CN6
CH1 MIC IN
Q5
A, B
IC5 TK10322
From 07 TUNER/IF CN3 AUDIO IN
CN5
CN6
From 10 CN2, TERMINAL CN5
AUX (CH1)
CN7
CAMERA(CH1)
CN8
From 04 AUDIO CN13
TV
SIMULCAST
AUX
CAMERA
CN2
REC MUT
From 03 VIDEO, CN14
12V
D11
CN12
ON
OFF
LIMITER SW
Q7
PB.REC,MUT.CTL
AGC DET
6dB
PWR MUT
MUT CTL
R
M
P
Q9
PB, REC
C108
REF.V
CCA
V-I. CONV
DET
IC15 EHM-X42U50S
IC8 M5218P
R227
CH1 EE
R24
CN3
CH1 LINE OUT
To 04 AUDIO, CN5
CN21
PB, REC CTL
MUT CTL
To 04 AUDIO, CN11
CN14
CH1 OUT,
To 04 AUDIO, CN14
CN15
CH1 LINE OUT(FMA ONLY)
To 10 TERMINAL, CN3
CH1 LEVEL ADJ
R77
CN13
From CH2
R76
CH2 LEVEL ADJ
29 AUDIO LEVEL IND
16 PRE AMP
CH2
AUDIO HEAD
CH1
ROTARY TRANSFORMER
CN1
TP5
IC2 AN6392
REC AMP
A
B
TP6
1.3M REC LEVEL
R117
R146
1.7M REC LEVEL
From CH2
VCO
R108
CH1 REC LEVEL
LPF
IC12 M5218P
LIMITER
D5, D6
PREEMP
R131
C109
DEEMP
R192
C99
R114
5V
CARRIER ADJ
Q2
T1
TP1
R2
R5
TP2
Q3
T2
Q1
CN2
PB 5V
From 03 VIDEO, CN14
REC 9V
IC1 HA11752
PRE AMP
CH2
CH1
TP3
AGC AMP
DET
CH1
CH2
Q4, Q13
BPF
1.3MHz
1.7MHz
To CH2
LIMITER
PHASE COMP
EF
DROP OUT DET
TRIGGER
MULTIPLIER
MMV
C101
12dB
HOLD
IC13 AN6391S
R156
C134
IC20 7VT06
R126
CH1 PB LEVEL
10dB
DIFFEREN TIATION
COMPEN SATION
C100
IC9 TA7324P
R72
R71
DISCHARGE
CHARGE LEVEL DET
R70
R73
C71
To CH2
IC17 BA226F-T2
IC18 BA634F-T2
Q11
DRUM FF IN
From 04 AUDIO, CN10
CN16
D10
FF
CH2 SW
R172
R175
C141
C139
CH1 SW
D12
Q14
From PB, REC CTL
R94
R97
C76
R95
R96
IC11 TA7324P
From 04 AUDIO CN10,16
CH2 IN
CH1 IN
IC10 M5218P
CN19
CH1 MIXING AUDIO OUT
To 10 TERMINAL CN4
CH2 MIXING AUDIO OUT
CN18
CH2 MIX OUT
CH1 MIX OUT
To 03 VIDEO, CN301 (RF CONV)
CH2
(PHONES)
CN17
CH1
To 04 AUDIO, CN14
05 FM AUDIO (FMA)
6
5
4
3
2
1
A
B
C
E
F
G
H

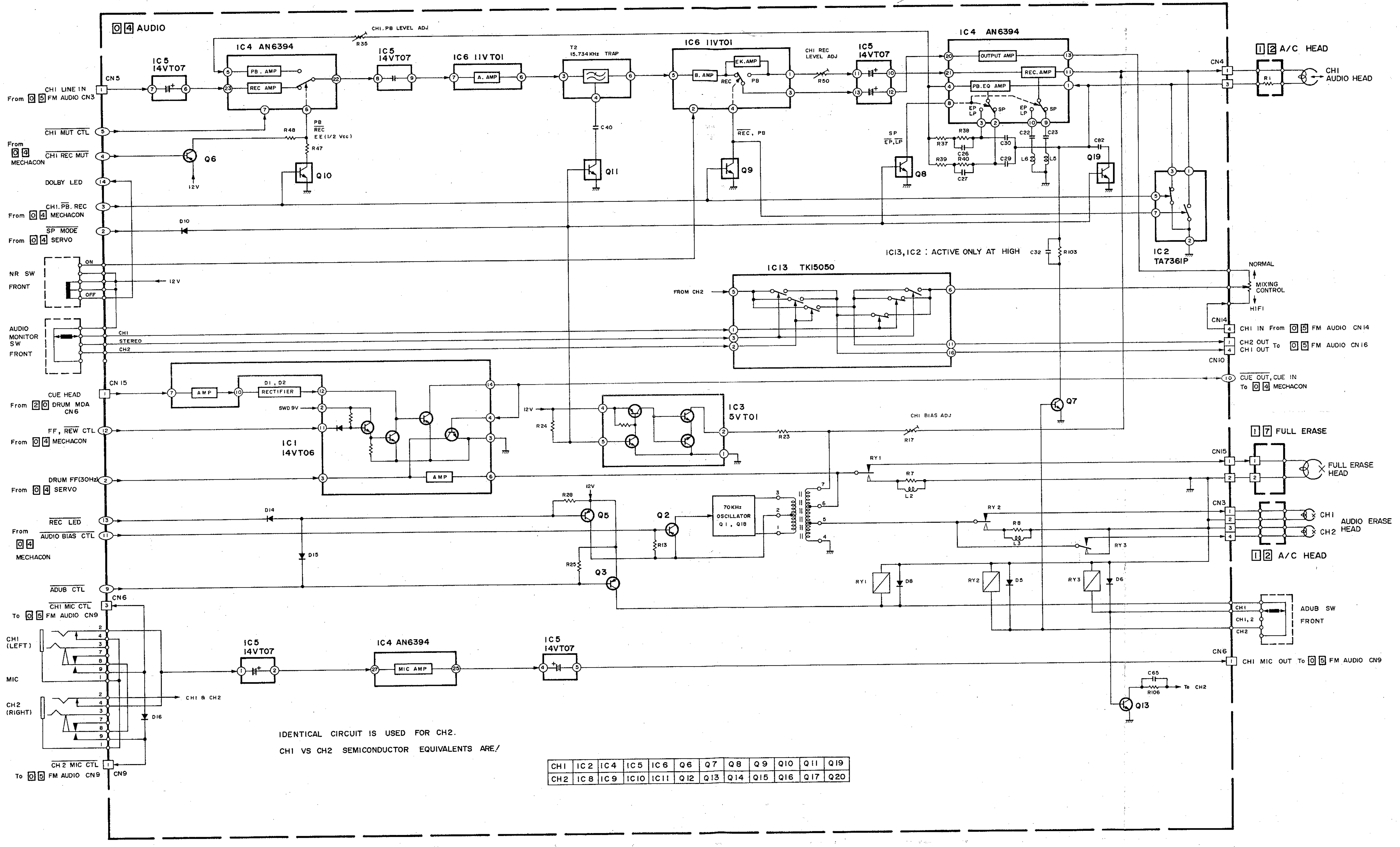
IDENTICAL CIRCUIT IS USED FOR CH2

CH1 VS CH2 SEMICONDUCTOR EQUIVALENTS

AND DIFFERENCE PINS ARE

| CH1 PIN | IC 3 | IC 4 | IC 5 | IC 6 | IC7 | IC8 | IC12 | IC13 | IC15 | IC19 | IC20 | Q 5 | Q 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | ①②③④ | ①②③④ | ④⑤⑥⑦⑨ | ①②③④ | ⑤⑦ | ③① | ⑤⑦ |  |  | ③① |  |  |  |
| PIN CH2 | ⑩⑨⑧⑦ | ⑩⑨⑧⑦ | ⑳⑲⑱⑰⑮ | ⑩⑨⑧⑦ | ③① | ⑤⑦ | ③① |  |  | ⑤⑦ |  |  |  |
|  | IC 3 | IC 4 | IC 5 | IC 6 | IC7 | IC8 | IC12 | IC14 | IC16 | IC19 | IC21 | Q 6 | Q 8 |

## 4.5 AUDIO BLOCK DIAGRAM

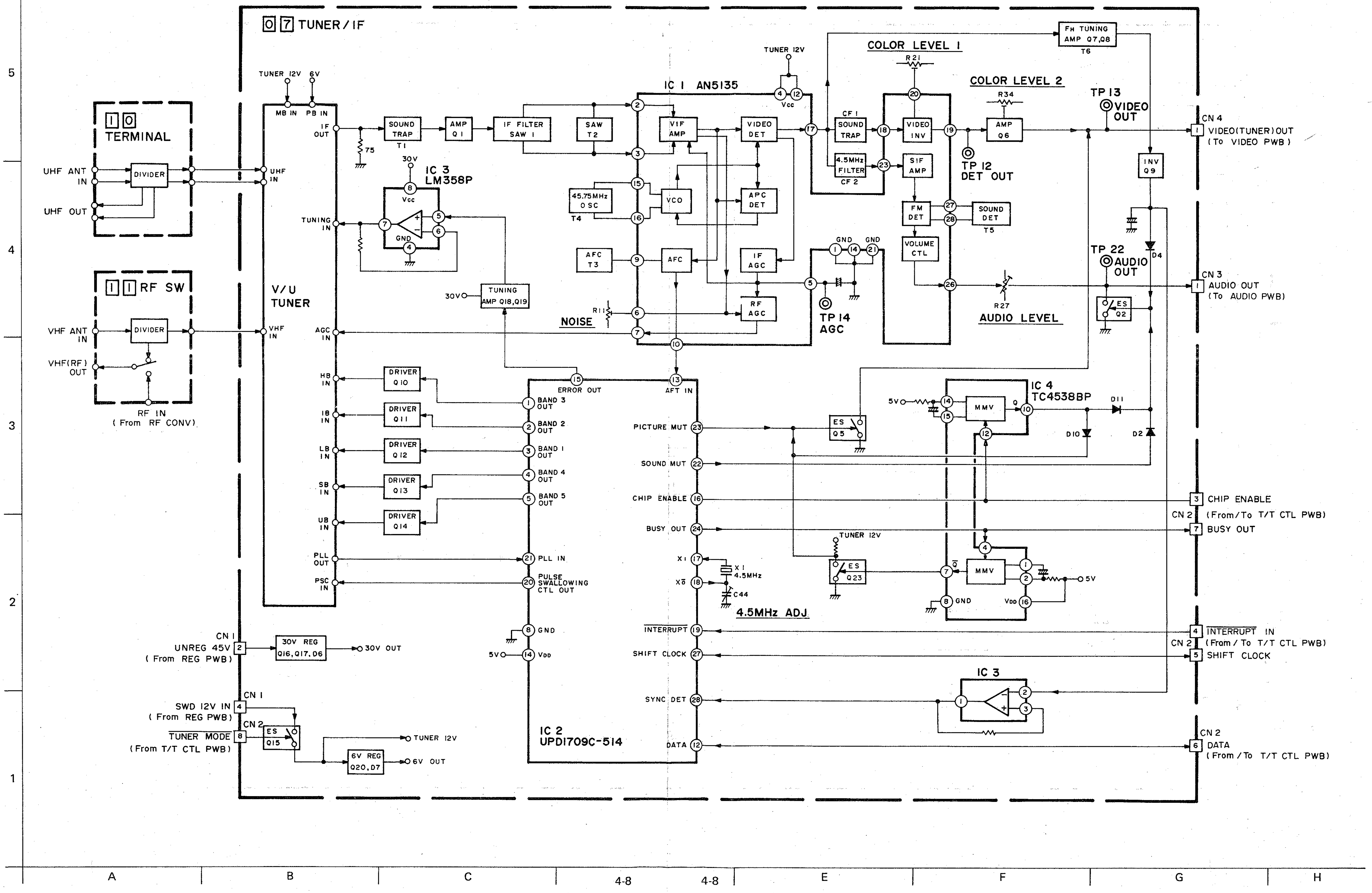

04 AUDIO
CH1.PB LEVEL ADJ
R35
IC5 14VT07
IC4 AN6394
PB. AMP
REC AMP
IC5 14VT07
IC6 11VT01
A. AMP
T2 15.734KHz TRAP
C40
IC6 11VT01
B. AMP
EK.AMP
REC
PB
REC, PB
CH1 REC LEVEL ADJ
R50
IC5 14VT07
IC4 AN6394
OUTPUT AMP
REC. AMP
PB.EQ AMP
EP LP
SP
SP EP,LP
R37
R38
C26
R39
R40
C27
C30
C29
C22
C23
L6
L5
C82
Q19
Q8
Q9
Q11
Q10
Q6
12V
R48
R47
PB REC EE(1/2 Vcc)
CN5
CH1 LINE IN
From 05 FM AUDIO CN3
CH1 MUT CTL
From 04 MECHACON
CH1 REC MUT
DOLBY LED
CH1.PB.REC
From 04 MECHACON
SP MODE
From 04 SERVO
D10
NR SW
FRONT
ON
OFF
12V
AUDIO MONITOR SW
FRONT
CH1
STEREO
CH2
IC13, IC2 : ACTIVE ONLY AT HIGH
C32
R103
IC2 TA7361P
IC13 TK15050
FROM CH2
12 A/C HEAD
CN4
R1
CH1 AUDIO HEAD
NORMAL
MIXING CONTROL
HIFI
CN14
CH1 IN From 05 FM AUDIO CN14
CH2 OUT
CH1 OUT
To 05 FM AUDIO CN16
CN10
CUE OUT, CUE IN
To 04 MECHACON
CN 15
CUE HEAD
From 20 DRUM MDA CN6
AMP
D1, D2
RECTIFIER
SWD 9V
FF, REW CTL
From 04 MECHACON
IC1 14VT06
AMP
DRUM FF(30Hz)
From 04 SERVO
12V
R24
IC3 5VT01
R23
CH1 BIAS ADJ
R17
Q7
17 FULL ERASE
CN15
FULL ERASE HEAD
RY1
R7
L2
R28
12V
Q5
Q2
70KHz OSCILLATOR Q1, Q18
R13
R25
Q3
RY 2
R8
L3
RY 3
CN3
CH1
CH2
AUDIO ERASE HEAD
12 A/C HEAD
REC LED
D14
From 04 MECHACON
AUDIO BIAS CTL
D15
ADUB CTL
RY1
D8
RY2
D5
RY3
D6
ADUB SW
FRONT
CH1
CH1, 2
CH2
CN6
CH1 MIC CTL
To 05 FM AUDIO CN9
CH1 (LEFT)
MIC
CH2 (RIGHT)
CH1 & CH2
D16
CH2 MIC CTL
To 05 FM AUDIO CN9
CN9
IC5 14VT07
IC4 AN6394
MIC AMP
IC5 14VT07
CN6
CH1 MIC OUT To 05 FM AUDIO CN9
C65
R106
To CH2
Q13

IDENTICAL CIRCUIT IS USED FOR CH2.

CH1 VS CH2 SEMICONDUCTOR EQUIVALENTS ARE/

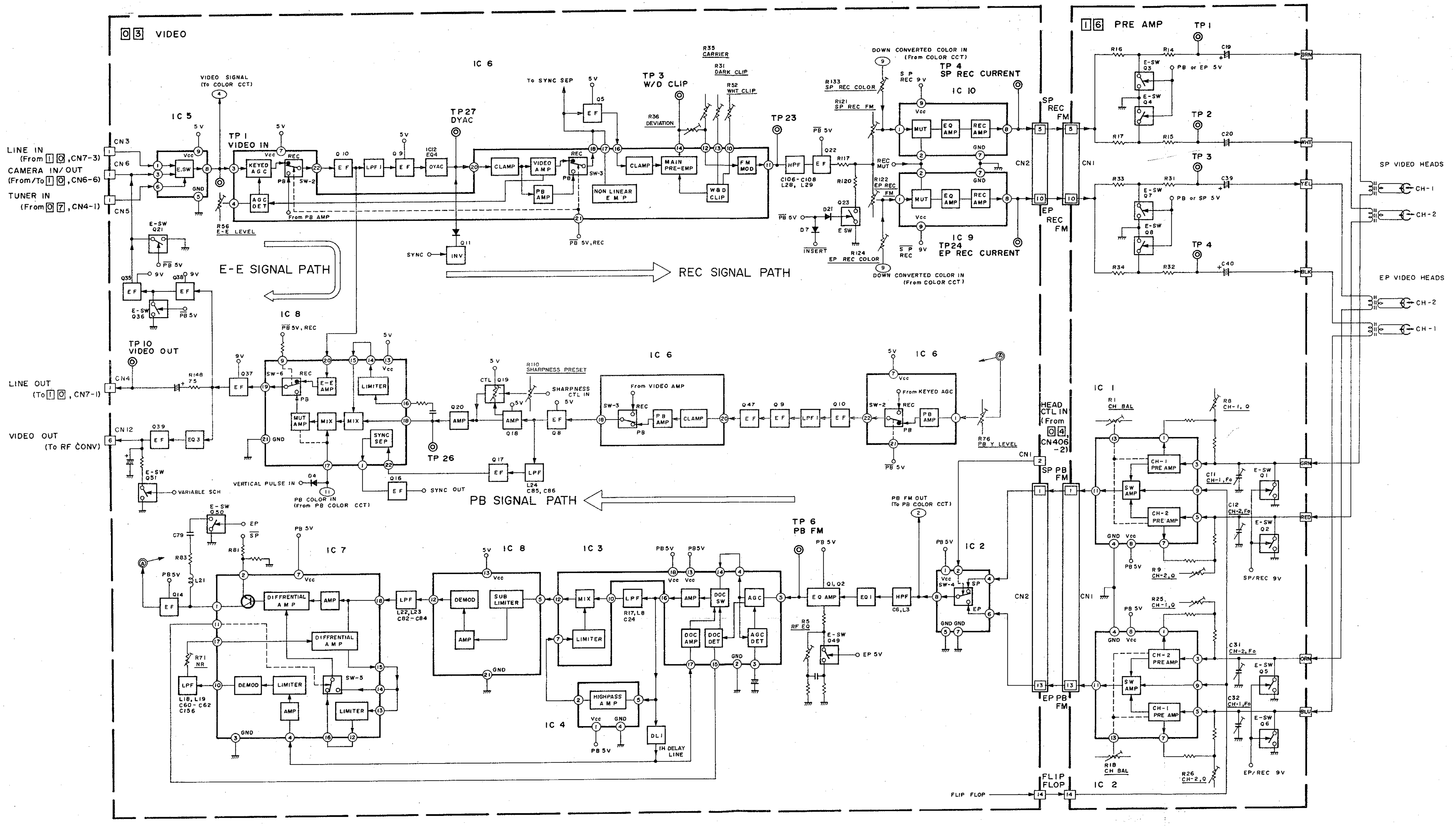
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CH1 | IC2 | IC4 | IC5 | IC6 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q19 |
| CH2 | IC8 | IC9 | IC10 | IC11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q20 |

## 4.6 TUNER/IF BLOCK DIAGRAM


07 TUNER / IF
10 TERMINAL
UHF ANT IN
DIVIDER
UHF OUT
11 RF SW
VHF ANT IN
DIVIDER
VHF(RF) OUT
RF IN
( From RF CONV)
V/U TUNER
TUNER 12V
6V
MB IN
PB IN
IF OUT
UHF IN
VHF IN
TUNING IN
AGC IN
HB IN
IB IN
LB IN
SB IN
UB IN
PLL OUT
PSC IN
75
SOUND TRAP
T1
AMP Q1
IF FILTER SAW 1
SAW T2
IC 3 LM358P
30V
Vcc
GND
TUNING AMP Q18,Q19
30V
45.75MHz OSC
T4
AFC T3
NOISE
R11
IC 1 AN5135
TUNER 12V
Vcc
VIF AMP
VIDEO DET
VCO
APC DET
AFC
IF AGC
RF AGC
CF 1
SOUND TRAP
4.5MHz FILTER
CF 2
COLOR LEVEL 1
R21
VIDEO INV
SIF AMP
FM DET
VOLUME CTL
SOUND DET
T5
GND
GND
TP 14 AGC
TP 12 DET OUT
FH TUNING AMP Q7,Q8
T6
COLOR LEVEL 2
R34
AMP Q6
TP 13 VIDEO OUT
INV Q9
D4
TP 22 AUDIO OUT
ES Q2
R27
AUDIO LEVEL
CN 4
1 VIDEO(TUNER)OUT
(To VIDEO PWB)
CN 3
1 AUDIO OUT
(To AUDIO PWB)
DRIVER Q10
DRIVER Q11
DRIVER Q12
DRIVER Q13
DRIVER Q14
ERROR OUT
AFT IN
BAND 3 OUT
BAND 2 OUT
BAND 1 OUT
BAND 4 OUT
BAND 5 OUT
PLL IN
PULSE SWALLOWING CTL OUT
GND
5V
VDD
PICTURE MUT
SOUND MUT
CHIP ENABLE
BUSY OUT
X1
X0̄
X1 4.5MHz
C44
4.5MHz ADJ
INTERRUPT
SHIFT CLOCK
SYNC DET
DATA
IC 2 UPD1709C-514
ES Q5
5V
IC 4 TC4538BP
MMV
Q
D11
D10
D2
TUNER 12V
ES Q23
Q̄
MMV
GND
VDD
5V
IC 3
3 CHIP ENABLE
CN 2 (From/To T/T CTL PWB)
7 BUSY OUT
4 INTERRUPT IN
CN 2 (From / To T/T CTL PWB)
5 SHIFT CLOCK
CN 2
6 DATA
(From / To T/T CTL PWB)
CN 1
UNREG 45V 2
( From REG PWB)
30V REG Q16,Q17,D6
30V OUT
CN 1
SWD 12V IN 4
( From REG PWB)
TUNER MODE 8
(From T/T CTL PWB)
CN 2
ES Q15
TUNER 12V
6V REG Q20,D7
6V OUT
6
5
4
3
2
1
A
B
C
E
F
G
H

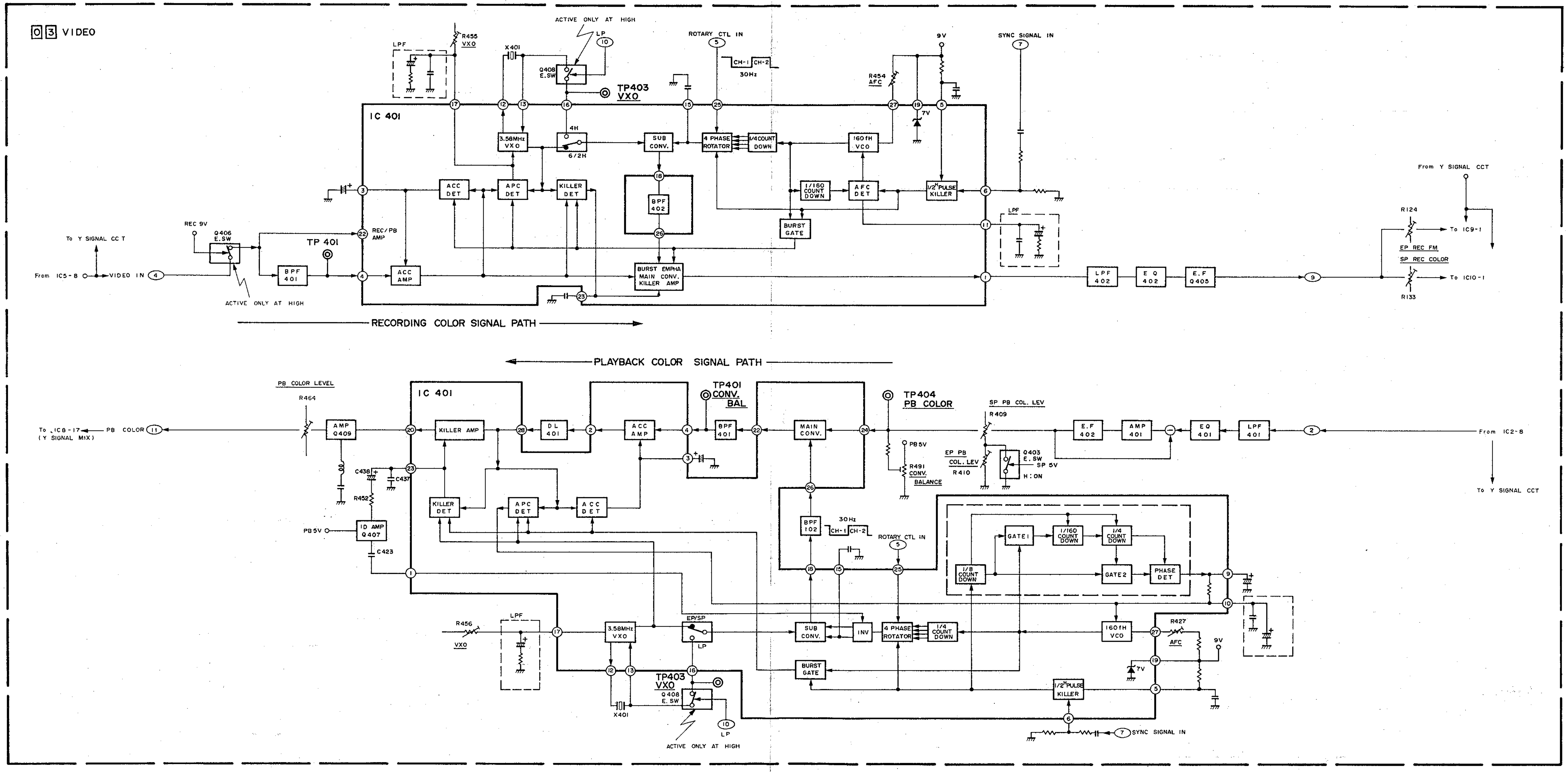
## 4.7 VIDEO BLOCK DIAGRAM

### 4.7.1 Luminance signal system

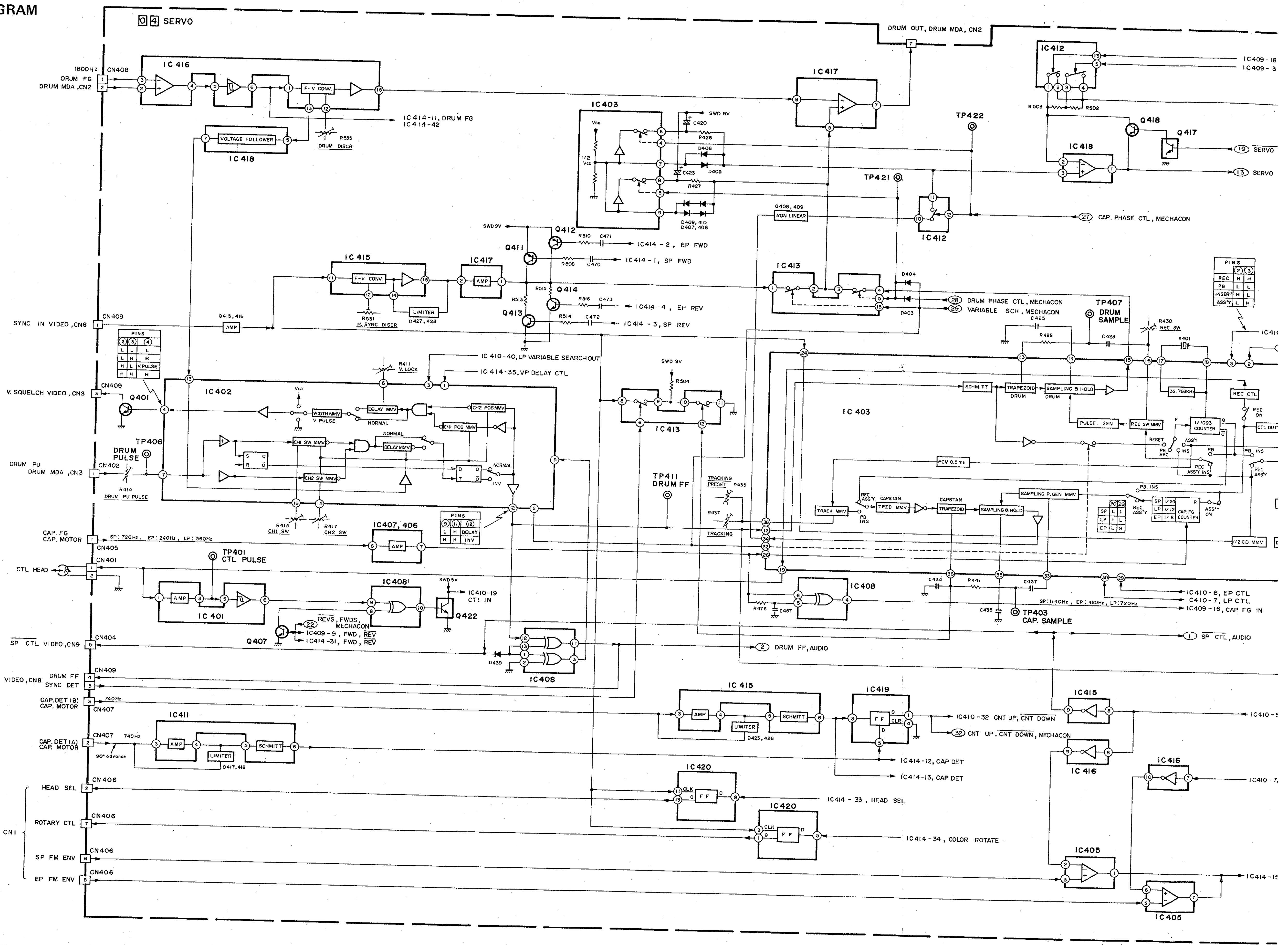


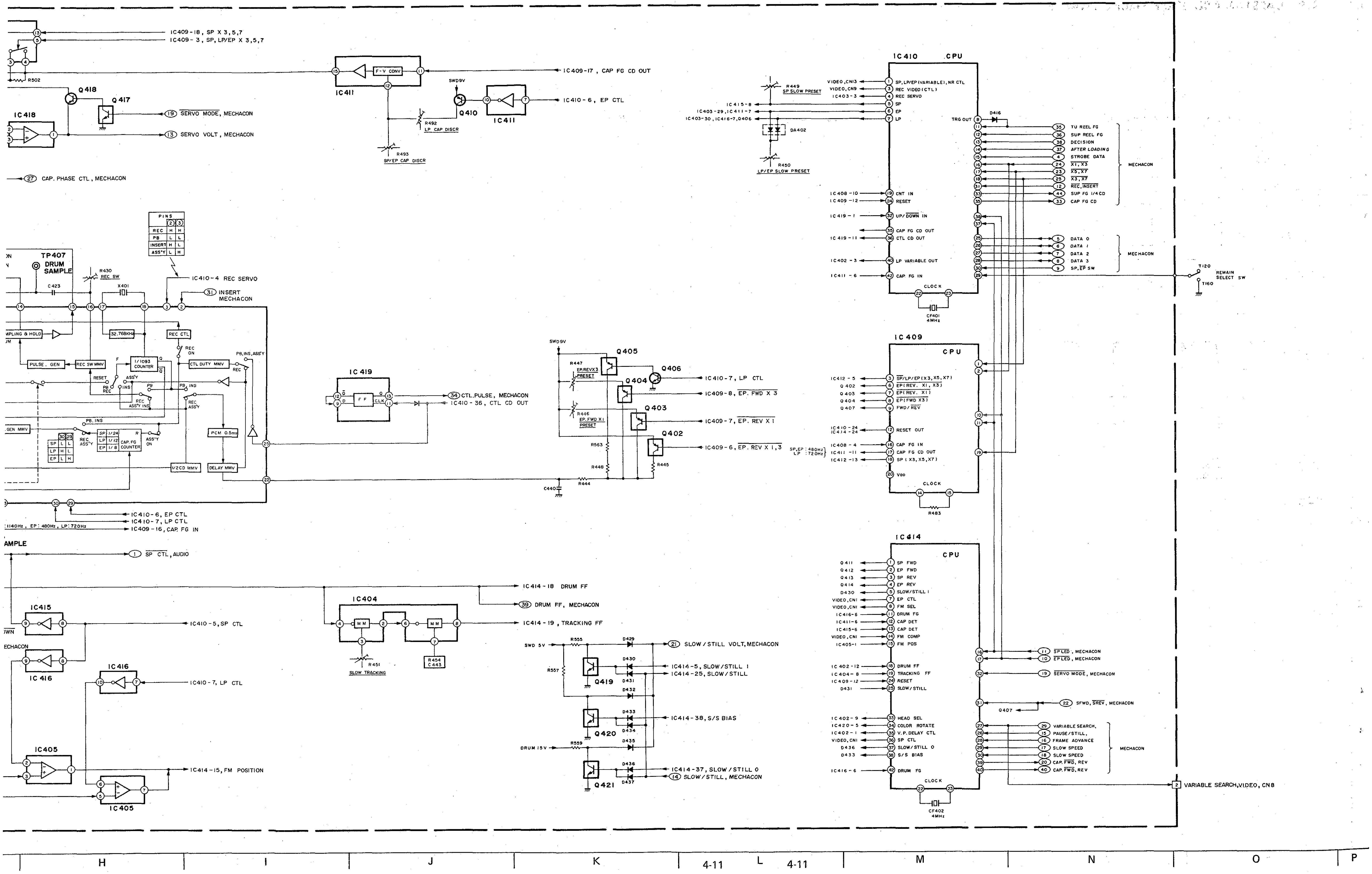
03 VIDEO
16 PRE AMP
LINE IN (From 10, CN7-3)
CAMERA IN/OUT (From/To 10, CN6-6)
TUNER IN (From 07, CN4-1)
LINE OUT (To 10, CN7-1)
VIDEO OUT (To RF CONV)
TP 10 VIDEO OUT
IC 5
IC 6
IC 8
IC 7
IC 3
IC 4
IC 2
IC 10
IC 9
IC 1
TP 1 VIDEO IN
KEYED AGC
AGC DET
TP27 DYAC
CLAMP
VIDEO AMP
PB AMP
NON LINEAR EMP
MAIN PRE-EMP
W&D CLIP
FM MOD
TP 3 W/D CLIP
R35 CARRIER
R31 DARK CLIP
R52 WHT CLIP
R36 DEVIATION
TP 23
HPF
To SYNC SEP
VIDEO SIGNAL (To COLOR CCT)
R56 E-E LEVEL
E-E SIGNAL PATH
REC SIGNAL PATH
PB SIGNAL PATH
SYNC
INV
DOWN CONVERTED COLOR IN (From COLOR CCT)
R133 SP REC COLOR
R121 SP REC FM
R122 EP REC FM
R124 EP REC COLOR
TP 4 SP REC CURRENT
TP24 EP REC CURRENT
MUT
EQ AMP
REC AMP
INSERT
SP REC FM
EP REC FM
CN1
CN2
TP 1
TP 2
TP 3
TP 4
SP VIDEO HEADS
EP VIDEO HEADS
CH-1
CH-2
BRN
WHT
YEL
BLK
GRN
RED
ORN
BLU
LIMITER
E-E AMP
MUT AMP
MIX
SYNC SEP
TP 26
R110 SHARPNESS PRESET
SHARPNESS CTL IN
From VIDEO AMP
From KEYED AGC
R76 PB Y LEVEL
LPF
SYNC OUT
VERTICAL PULSE IN
PB COLOR IN (From PB COLOR CCT)
VARIABLE SCH
HEAD CTL IN (From 04 CN406-21)
SP PB FM
EP PB FM
CH-1 PRE AMP
CH-2 PRE AMP
SW AMP
R1 CH BAL
R18 CH BAL
SP/REC 9V
EP/REC 9V
TP 6 PB FM
PB FM OUT (To PB COLOR CCT)
R5 RF EQ
EQ AMP
EQ1
DIFFRENTIAL AMP
DEMOD
SUB LIMITER
AMP
AGC
AGC DET
DOC SW
DOC AMP
DOC DET
HIGHPASS AMP
DL1 1H DELAY LINE
R71 NR
FLIP FLOP

## 4.7.2 Color signal system


03 VIDEO
LPF
R455
VXO
X401
ACTIVE ONLY AT HIGH
LP
10
Q408
E.SW
TP403
VXO
ROTARY CTL IN
5
CH-1
CH-2
30Hz
9V
R454
AFC
7V
SYNC SIGNAL IN
7
IC 401
17
12
13
16
15
25
27
19
5
3.58MHz
VXO
4H
6/2H
SUB
CONV.
4 PHASE
ROTATOR
1/4 COUNT
DOWN
160fH
VCO
3
ACC
DET
APC
DET
KILLER
DET
18
BPF
402
26
1/160
COUNT
DOWN
AFC
DET
1/2H PULSE
KILLER
6
11
BURST
GATE
REC 9V
Q406
E.SW
To Y SIGNAL CC T
TP 401
22
REC/PB
AMP
From IC5-8
VIDEO IN
4
BPF
401
ACC
AMP
BURST EMPHA
MAIN CONV.
KILLER AMP
23
1
ACTIVE ONLY AT HIGH
LPF
402
E Q
402
E.F
Q405
9
From Y SIGNAL CCT
R124
To IC9-1
EP REC FM
SP REC COLOR
To IC10-1
R133
RECORDING COLOR SIGNAL PATH
PLAYBACK COLOR SIGNAL PATH
PB COLOR LEVEL
R464
IC 401
TP401
CONV.
BAL
TP404
PB COLOR
SP PB COL. LEV
R409
To IC8-17
(Y SIGNAL MIX)
PB COLOR
11
AMP
Q409
20
KILLER AMP
28
DL
401
2
ACC
AMP
4
BPF
401
22
MAIN
CONV.
24
E.F
402
AMP
401
EQ
401
LPF
401
2
From IC2-8
To Y SIGNAL CCT
3
PB5V
R491
CONV.
BALANCE
EP PB
COL. LEV
R410
Q403
E.SW
SP 5V
H:ON
C438
C437
23
R452
KILLER
DET
APC
DET
ACC
DET
26
PB5V
ID AMP
Q407
C423
BPF
102
30Hz
CH-1
CH-2
ROTARY CTL IN
5
1/8
COUNT
DOWN
GATE 1
1/160
COUNT
DOWN
1/4
COUNT
DOWN
GATE 2
PHASE
DET
18
15
25
9
10
1
R456
VXO
LPF
17
3.58MHz
VXO
EP/SP
LP
SUB
CONV.
INV
4 PHASE
ROTATOR
1/4
COUNT
DOWN
160fH
VCO
27
R427
AFC
9V
19
7V
BURST
GATE
12
13
16
TP403
VXO
Q408
E. SW
X401
1/2H PULSE
KILLER
5
6
10
LP
ACTIVE ONLY AT HIGH
7
SYNC SIGNAL IN

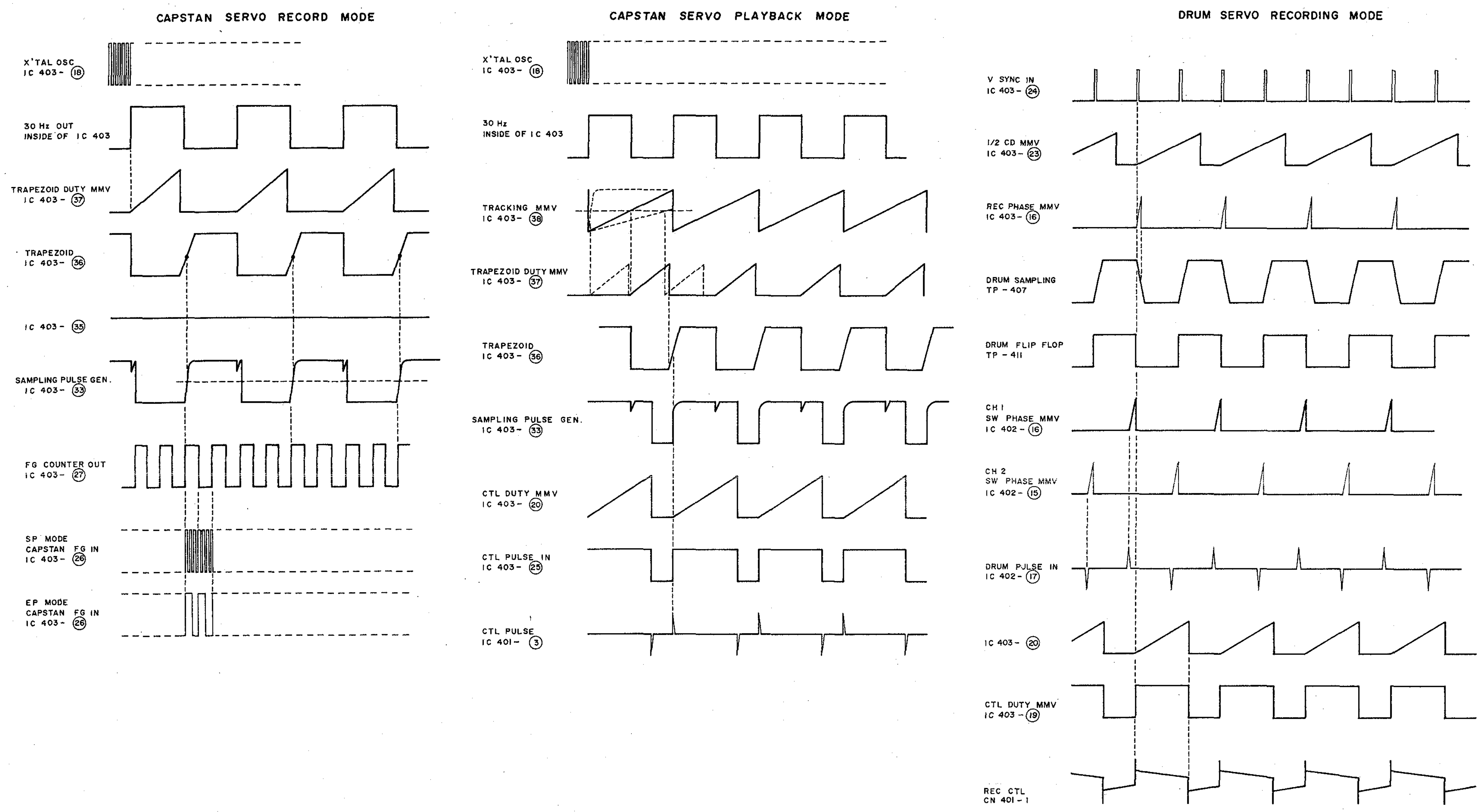
## 4.8 SERVO BLOCK DIAGRAM

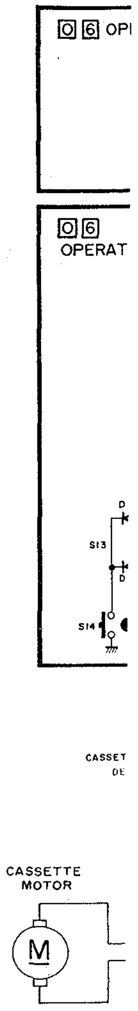

04 SERVO
DRUM OUT, DRUM MDA, CN2
1800Hz DRUM FG DRUM MDA, CN2
CN408
IC416
F-V CONV.
IC414-11, DRUM FG
IC414-42
VOLTAGE FOLLOWER
IC418
R535 DRUM DISCR
IC417
IC403
SWD 9V
C420
R426
D406
D405
C423
R427
D409, 410 D407, 408
Vcc
1/2 Vcc
TP422
TP421
IC412
R503
R502
Q418
Q417
IC418
IC409-18
IC409-3
19 SERVO
13 SERVO
27 CAP. PHASE CTL, MECHACON
Q408, 409 NON LINEAR
SWD9V
Q412
Q411
R510 C471
IC414-2, EP FWD
R508 C470
IC414-1, SP FWD
R515
Q414
R513
R516 C473
IC414-4, EP REV
Q413
R514 C472
IC414-3, SP REV
IC415
F-V CONV.
R531 H. SYNC DISCR
LIMITER D427, 428
IC417
AMP
IC413
D404
D403
28 DRUM PHASE CTL, MECHACON
29 VARIABLE SCH, MECHACON
TP407 DRUM SAMPLE
C425
R428
C423
R430 REC SW
X401
SYNC IN VIDEO, CN8
CN409
Q415, 416 AMP
PINS
2 3 4
L L L
L H H
H L V.PULSE
H H H
IC410-40, LP VARIABLE SEARCHOUT
IC414-35, VP DELAY CTL
R411 V. LOCK
V. SQUELCH VIDEO, CN3
CN409
Q401
IC402
Vcc
WIDTH MMV
V. PULSE
DELAY MMV
NORMAL
CH2 POS MMV
CH1 POS MMV
CH1 SW MMV
DELAY MMV
CH2 SW MMV
INV
TP406
DRUM PULSE
DRUM PU DRUM MDA, CN3
CN402
R414 DRUM PU PULSE
R415 CH1 SW
R417 CH2 SW
PINS
9 11 12
L H DELAY
H H INV
SWD 9V
R504
IC413
TP411 DRUM FF
TRACKING PRESET R435
R437
TRACKING
IC 403
SCHMITT
TRAPEZOID DRUM
SAMPLING & HOLD DRUM
PULSE GEN
REC SW MMV
1/1093 COUNTER
32.768KHz
REC CTL
REC ON
CTL OUT
RESET
PB REC
INS
ASS'Y
PB INS
REC ASS'Y INS
PCM 0.5ms
PB. INS
SAMPLING P. GEN MMV
TRACK MMV
REC ASS'Y
CAPSTAN TPZD MMV
PB INS
CAPSTAN TRAPEZOID
SAMPLING & HOLD
SP 1/24
LP 1/12
EP 1/8
CAP. FG COUNTER
R ASS'Y ON
30 29
SP L L
LP H L
EP L H
REC ASS'Y
1/2CD MMV
PINS
2 3
REC H H
PB L L
INSERT H L
ASS'Y L H
CAP. FG CAP. MOTOR
CN405
SP: 720Hz, EP: 240Hz, LP: 360Hz
IC407, 406
AMP
TP401 CTL PULSE
CTL HEAD
CN401
IC401
AMP
IC408
SWD 5V
IC410-19 CTL IN
Q422
22 REVS, FWDS, MECHACON
IC409-9, FWD, REV
IC414-31, FWD, REV
Q407
IC408
C434
R441
C437
R476 C457
C435
TP403 CAP. SAMPLE
SP: 1140Hz, EP: 480Hz, LP: 720Hz
IC410-6, EP CTL
IC410-7, LP CTL
IC409-16, CAP. FG IN
SP CTL VIDEO, CN9
CN404
D439
IC408
2 DRUM FF, AUDIO
1 SP CTL, AUDIO
VIDEO, CN8 DRUM FF SYNC DET
CN409
CAP. DET (B) CAP. MOTOR
740Hz
CN407
IC415
AMP
LIMITER D425, 426
SCHMITT
IC419
FF CLR
IC410-32 CNT UP, CNT DOWN
32 CNT UP, CNT DOWN, MECHACON
IC414-12, CAP DET
IC414-13, CAP DET
IC415
IC410-5
IC416
CAP. DET (A) CAP. MOTOR
CN407 740Hz
90° advance
IC411
AMP
LIMITER D417, 418
SCHMITT
HEAD SEL
CN406
IC420
CLK FF
IC414-33, HEAD SEL
VIDEO CN1
ROTARY CTL
CN406
IC420
CLK FF
IC414-34, COLOR ROTATE
IC416
IC410-7
SP FM ENV
CN406
IC405
EP FM ENV
CN406
IC414-15
IC405
6 5 4 3 2 1
A B C E F G H

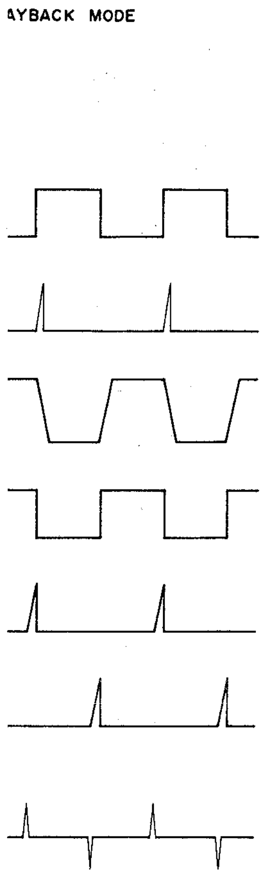

IC409-18, SP X 3,5,7
IC409-3, SP, LP/EP X 3,5,7
R502
Q418
Q417
IC418
SERVO MODE, MECHACON
SERVO VOLT, MECHACON
CAP. PHASE CTL, MECHACON
IC411
F-V CONV
IC409-17, CAP FG CD OUT
SWD9V
Q410
IC411
IC410-6, EP CTL
R492
LP CAP DISCR
R493
SP/EP CAP DISCR
PINS
REC H H
PB L L
INSERT H L
ASS'Y L H
TP407
DRUM SAMPLE
R430
REC SW
C423
X401
IC410-4 REC SERVO
INSERT MECHACON
32.768KHz
REC CTL
MPLING & HOLD
PULSE. GEN
REC SW MMV
1/1093 COUNTER
CTL DUTY MMV
RESET
PB REC
INS
ASS'Y
PB
REC ASS'Y INS
PB, INS
REC ASS'Y
PB, INS, ASS'Y
GEN MMV
SP 1/24
LP 1/12
EP 1/8
CAP. FG COUNTER
REC ASS'Y
ASS'Y ON
PCM 0.5ms
1/2CD MMV
DELAY MMV
IC410-6, EP CTL
IC410-7, LP CTL
IC409-16, CAP. FG IN
:1140Hz, EP: 480Hz, LP: 720Hz
AMPLE
SP CTL, AUDIO
IC419
FF
CLK
CTL.PULSE, MECHACON
IC410-36, CTL CD OUT
SWD9V
Q405
Q406
R447
EP.REVX3 PRESET
Q404
R446
EP.FWD X1 PRESET
Q403
Q402
R563
R448
R444
R445
C440
IC410-7, LP CTL
IC409-8, EP. FWD X 3
IC409-7, EP. REV X1
IC409-6, EP. REV X 1,3
SP,EP: 480Hz LP: 720Hz
IC414-18 DRUM FF
DRUM FF, MECHACON
IC414-19, TRACKING FF
IC404
MM
R451
SLOW TRACKING
R454 C443
IC415
IC410-5, SP CTL
OWN
ECHACON
IC416
IC416
IC410-7, LP CTL
IC405
IC405
IC414-15, FM POSITION
SWD 5V
R555
R557
D429
SLOW/STILL VOLT, MECHACON
D430
D431
D432
Q419
IC414-5, SLOW/STILL 1
IC414-25, SLOW/STILL
D433
D434
Q420
IC414-38, S/S BIAS
DRUM 15V
R559
D435
D436
D437
Q421
IC414-37, SLOW/STILL 0
SLOW/STILL, MECHACON
IC410 CPU
R449
SP SLOW PRESET
VIDEO, CN13
VIDEO, CN9
IC403-3
IC415-8
IC403-29, IC411-7
IC403-30, IC416-7, Q406
DA402
R450
LP/EP SLOW PRESET
SP, LP/EP (VARIABLE), NR CTL
REC VIDEO (CTL)
REC SERVO
SP
EP
LP
TRG OUT
D416
IC408-10
IC409-12
CNT IN
RESET
IC419-1
UP/DOWN IN
CAP FG CD OUT
IC419-11
CTL CD OUT
IC402-3
LP VARIABLE OUT
IC411-6
CAP FG IN
CLOCK
CF401 4MHz
TU REEL FG
SUP REEL FG
DECISION
AFTER LOADING
STROBE DATA
X1, X3
X5, X7
X3, X7
REC, INSERT
SUP FG 1/4CD
CAP FG CD
MECHACON
DATA 0
DATA 1
DATA 2
DATA 3
SP, EP SW
MECHACON
T120
T160
REMAIN SELECT SW
IC409 CPU
IC412-5
Q402
Q403
Q404
Q407
SP/LP/EP (X3, X5, X7)
EP (REV. X1, X3)
EP (REV. X1)
EP (FWD X3)
FWD/REV
IC410-24
IC414-24
RESET OUT
IC408-4
IC411-11
IC412-13
CAP FG IN
CAP FG CD OUT
SP (X3, X5, X7)
VDD
CLOCK
R483
IC414 CPU
Q411
Q412
Q413
Q414
D430
VIDEO, CN1
VIDEO, CN1
IC416-6
IC411-6
IC415-6
VIDEO, CN1
IC405-1
SP FWD
EP FWD
SP REV
EP REV
SLOW/STILL 1
EP CTL
FM SEL
DRUM FG
CAP DET
CAP DET
FM COMP
FM POS
IC402-12
IC404-8
IC409-12
D431
DRUM FF
TRACKING FF
RESET
SLOW/STILL
IC402-9
IC420-5
IC402-1
VIDEO, CN1
D436
D433
HEAD SEL
COLOR ROTATE
V.P. DELAY CTL
SP CTL
SLOW/STILL 0
S/S BIAS
IC416-6
DRUM FG
CLOCK
CF402 4MHz
SP LED, MECHACON
EP LED, MECHACON
SERVO MODE, MECHACON
Q407
SFWD, SREV, MECHACON
VARIABLE SEARCH,
PAUSE/STILL,
FRAME ADVANCE
SLOW SPEED
SLOW SPEED
CAP. FWD, REV
CAP. FWD, REV
MECHACON
VARIABLE SEARCH, VIDEO, CN8
H
I
J
K
L
M
N
O
P

## 4.9 CAPSTAN AND DRUM TIMING CHARTS

## 4.10

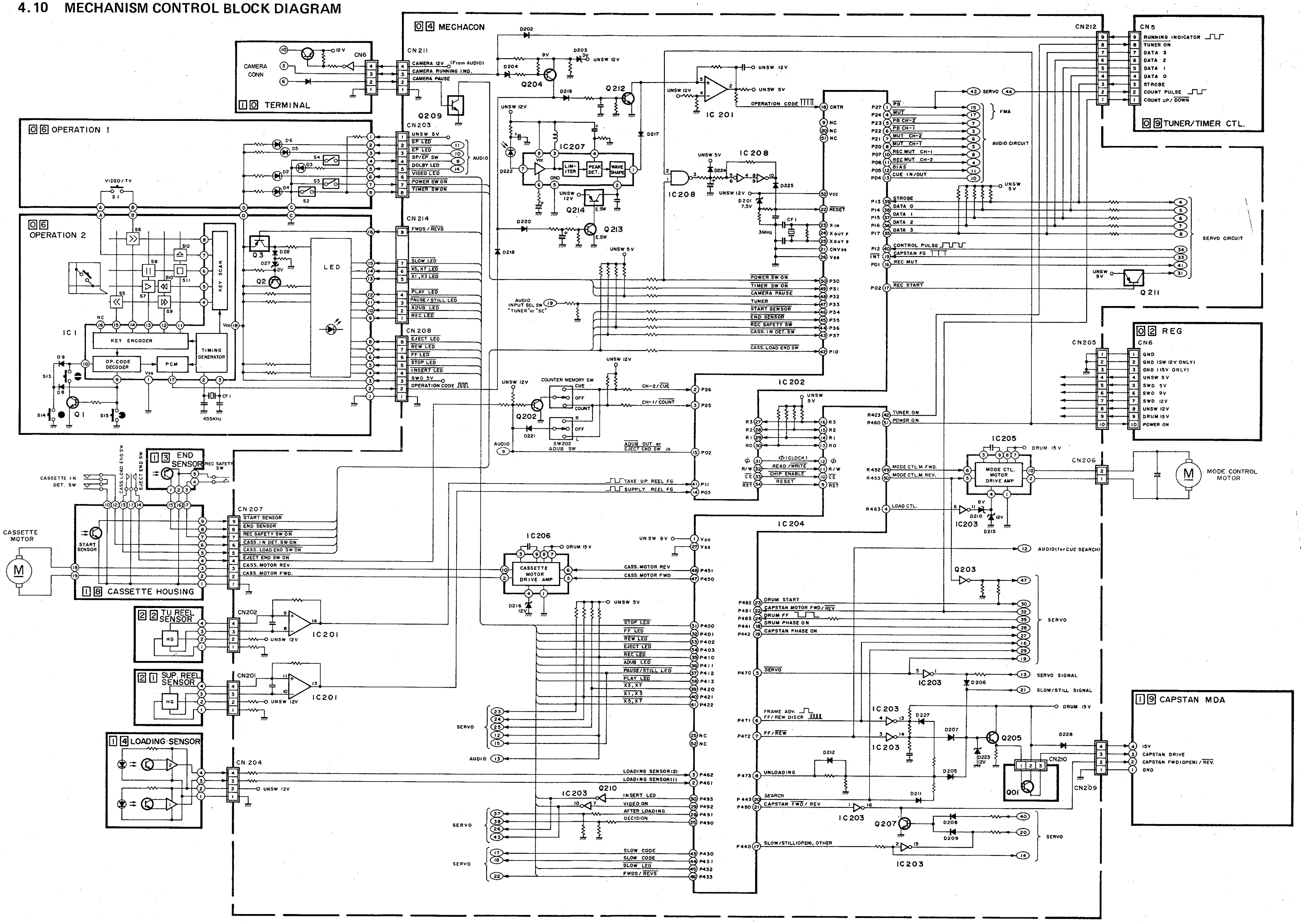

CAPSTAN SERVO RECORD MODE
X'TAL OSC
IC 403- ⑱
30 Hz OUT
INSIDE OF IC 403
TRAPEZOID DUTY MMV
IC 403- ㊲
TRAPEZOID
IC 403- ㊱
IC 403- ㉟
SAMPLING PULSE GEN.
IC 403- ㉝
FG COUNTER OUT
IC 403- ㉗
SP MODE
CAPSTAN FG IN
IC 403- ㉖
EP MODE
CAPSTAN FG IN
IC 403- ㉖
CAPSTAN SERVO PLAYBACK MODE
X'TAL OSC
IC 403- ⑱
30 Hz
INSIDE OF IC 403
TRACKING MMV
IC 403- ㊳
TRAPEZOID DUTY MMV
IC 403- ㊲
TRAPEZOID
IC 403- ㊱
SAMPLING PULSE GEN.
IC 403- ㉝
CTL DUTY MMV
IC 403- ⑳
CTL PULSE IN
IC 403- ㉕
CTL PULSE
IC 401- ③
DRUM SERVO RECORDING MODE
V SYNC IN
IC 403- ㉔
1/2 CD MMV
IC 403- ㉓
REC PHASE MMV
IC 403- ⑯
DRUM SAMPLING
TP - 407
DRUM FLIP FLOP
TP - 411
CH 1
SW PHASE MMV
IC 402- ⑯
CH 2
SW PHASE MMV
IC 402- ⑮
DRUM PULSE IN
IC 402- ⑰
IC 403- ⑳
CTL DUTY MMV
IC 403 - ⑲
REC CTL
CN 401 - 1
DRUM SERVO PLAYBACK MODE
X'TAL OSC
IC 403-⑱
30 Hz
INSIDE OF IC 403
REC PHASE MMV
IC 403-⑯
DRUM SAMPLING
TP- 407
DRUM FLIP FLOP
TP- 411
CH 1
SW PHASE MMV
IC 402- ⑯
CH 2
SW PHASE MMV
IC 402- ⑮
DRUM PULSE IN
IC 402-⑰


O 6 OP
O 6
OPERAT
S13
S14
CASSET
DE
CASSETTE
MOTOR
M



AYBACK MODE

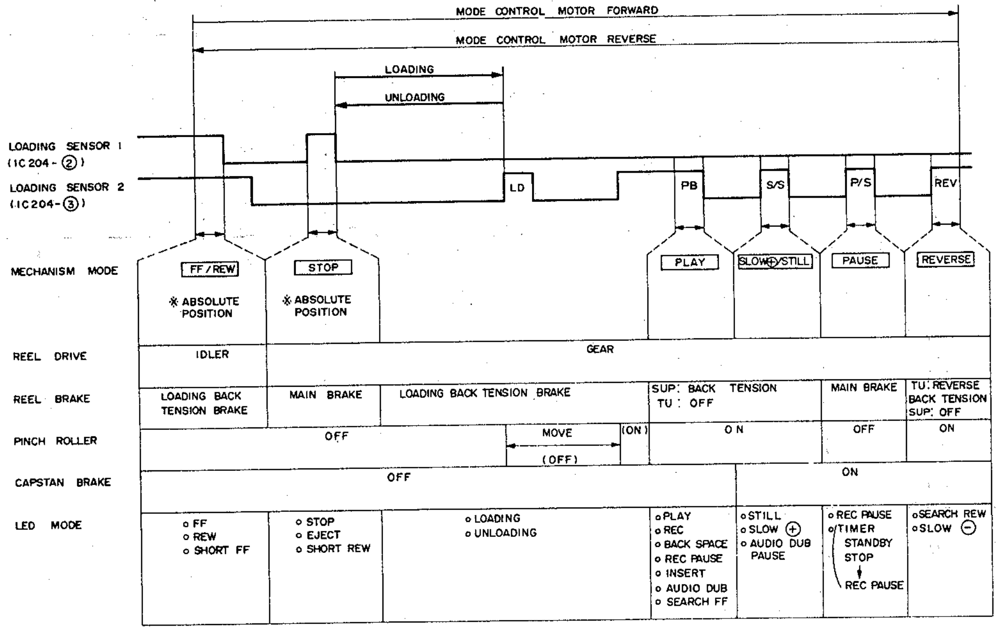
## 4.10 MECHANISM CONTROL BLOCK DIAGRAM

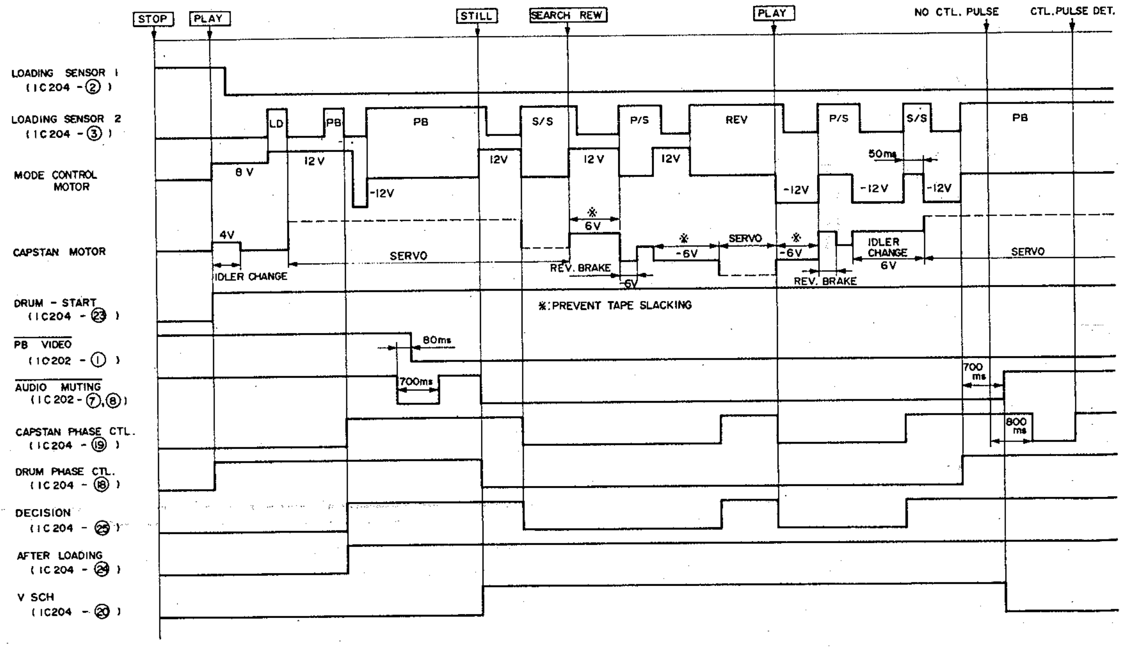


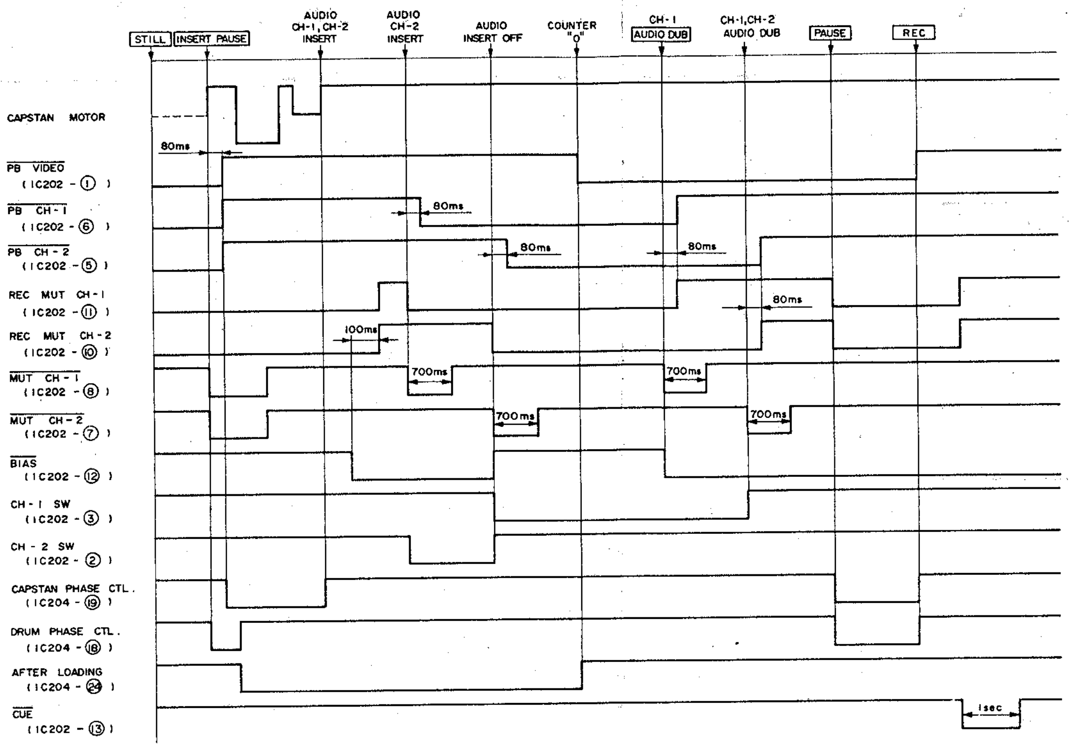
04 MECHACON
10 TERMINAL
CAMERA CONN
CN6
CN211
CAMERA 12V (From AUDIO)
CAMERA RUNNING IND.
CAMERA PAUSE
Q209
Q204
Q212
Q213
Q214
IC207
LIM-ITER
PEAK DET.
WAVE SHAPE
IC201
UNSW 12V
UNSW 5V
OPERATION CODE
IC208
D201 7.5V
3MHz
CF1
06 OPERATION 1
CN203
UNSW 5V
SP LED
EP LED
SP/EP SW
DOLBY LED
VIDEO LED
POWER SW ON
TIMER SW ON
AUDIO
VIDEO/TV
S1
S2
S3
S4
06 OPERATION 2
CN214
FWDS/REVS
SLOW LED
X5, X7 LED
X1, X3 LED
PLAY LED
PAUSE/STILL LED
ADUB LED
REC LED
CN208
EJECT LED
REW LED
FF LED
STOP LED
INSERT LED
SWD 5V
OPERATION CODE
KEY SCAN
KEY ENCODER
OP. CODE DECODER
PCM
TIMING GENERATOR
IC1
LED
Q1
Q2
Q3
455KHz
AUDIO INPUT SEL SW "TUNER" or "SC"
POWER SW ON
TIMER SW ON
CAMERA PAUSE
TUNER
START SENSOR
END SENSOR
REC SAFETY SW
CASS. IN DET. SW
CASS. LOAD END SW
COUNTER MEMORY SW
CUE
OFF
COUNT
R
SW202 ADUB SW
Q202
CH-2/CUE
CH-1/COUNT
ADUB OUT or EJECT END SW IN
TAKE-UP REEL FG
SUPPLY REEL FG
IC202
R3 R2 R1 R0
(CLOCK)
READ/WRITE
CHIP ENABLE
RESET
IC204
CN212
CN5
RUNNING INDICATOR
TUNER ON
DATA 3
DATA 2
DATA 1
DATA 0
STROBE
COUNT PULSE
COUNT UP/DOWN
09 TUNER/TIMER CTL.
SERVO
PB
MUT
PB CH-2
PB CH-1
MUT CH-2
MUT CH-1
REC MUT CH-1
REC MUT CH-2
BIAS
CUE IN/OUT
FMA
AUDIO CIRCUIT
STROBE
DATA 0
DATA 1
DATA 2
DATA 3
SERVO CIRCUIT
CONTROL PULSE
CAPSTAN FG
REC MUT
REC START
Q211
02 REG
CN205
CN6
GND
GND (SW 12V ONLY)
GND (15V ONLY)
UNSW 5V
SWD 5V
SWD 9V
SWD 12V
UNSW 12V
DRUM 15V
POWER ON
TUNER ON
POWER ON
IC205
MODE CTL. MOTOR DRIVE AMP
MODE CTL.M. FWD.
MODE CTL.M. REV.
CN206
MODE CONTROL MOTOR
LOAD CTL.
IC203
AUDIO (for CUE SEARCH)
Q203
DRUM START
CAPSTAN MOTOR FWD/REV
DRUM FF
DRUM PHASE ON
CAPSTAN PHASE ON
SERVO
SERVO SIGNAL
SLOW/STILL SIGNAL
DRUM 15V
FRAME ADV.
FF/REW DISCR
FF/REW
UNLOADING
SEARCH
CAPSTAN FWD/REV
SLOW/STILL (OPEN), OTHER
Q205
Q207
Q01
CN210
CN209
19 CAPSTAN MDA
15V
CAPSTAN DRIVE
CAPSTAN FWD (OPEN)/REV.
GND
13 END SENSOR
REC SAFETY SW
CASSETTE IN DET. SW
CASS. LOAD END SW
EJECT END SW
CN207
START SENSOR
END SENSOR
REC SAFETY SW ON
CASS. IN DET. SW ON
CASS. LOAD END SW ON
EJECT END SW ON
CASS. MOTOR REV.
CASS. MOTOR FWD.
CASSETTE MOTOR
18 CASSETTE HOUSING
IC206
CASSETTE MOTOR DRIVE AMP
DRUM 15V
CASS. MOTOR REV
CASS. MOTOR FWD
22 TU REEL SENSOR
CN202
21 SUP. REEL SENSOR
CN201
HG
UNSW 12V
STOP LED
FF LED
REW LED
EJECT LED
REC LED
ADUB LED
PAUSE/STILL LED
PLAY LED
X3, X7
X1, X3
X5, X7
14 LOADING SENSOR
CN 204
LOADING SENSOR (2)
LOADING SENSOR (1)
Q210
INSERT LED
VIDEO ON
AFTER LOADING
DECISION
SLOW CODE
SLOW CODE
SLOW LED
FWDS/REVS

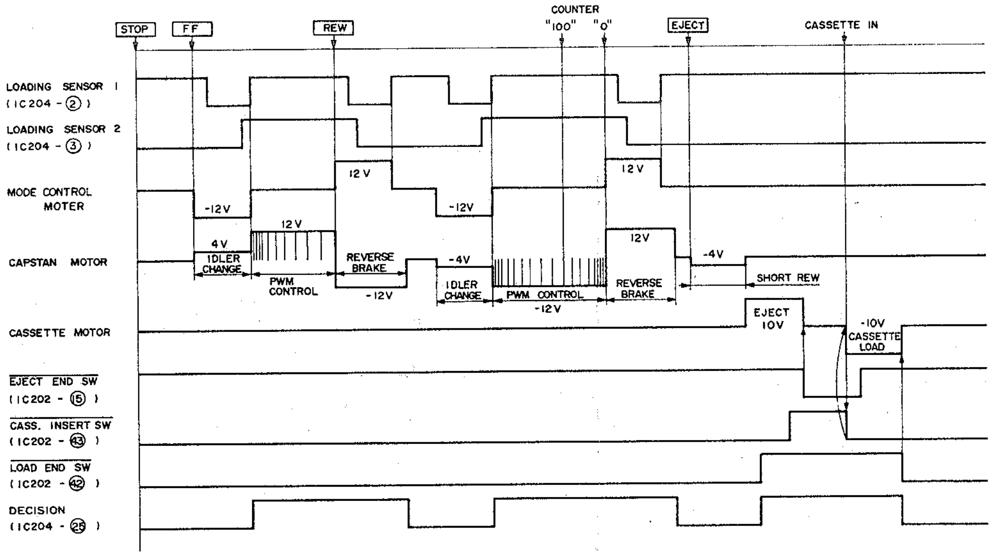
H | I | J | K | M | N | O | P

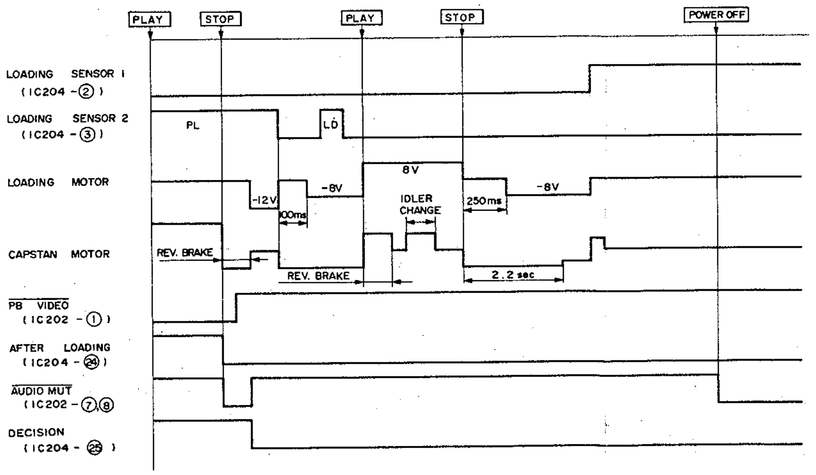
## 4.11 MECHANISM CONTROL TIMING CHARTS


MODE CONTROL MOTOR FORWARD
MODE CONTROL MOTOR REVERSE
LOADING
UNLOADING
LOADING SENSOR 1 (IC204-②)
LOADING SENSOR 2 (IC204-③)
LD
PB
S/S
P/S
REV
MECHANISM MODE
FF/REW
STOP
※ ABSOLUTE POSITION
※ ABSOLUTE POSITION
PLAY
SLOW/STILL
PAUSE
REVERSE
REEL DRIVE
IDLER
GEAR
REEL BRAKE
LOADING BACK TENSION BRAKE
MAIN BRAKE
LOADING BACK TENSION BRAKE
SUP: BACK TENSION TU: OFF
MAIN BRAKE
TU: REVERSE BACK TENSION SUP: OFF
PINCH ROLLER
OFF
MOVE
(OFF)
(ON)
ON
OFF
ON
CAPSTAN BRAKE
OFF
ON
LED MODE
o FF o REW o SHORT FF
o STOP o EJECT o SHORT REW
o LOADING o UNLOADING
o PLAY o REC o BACK SPACE o REC PAUSE o INSERT o AUDIO DUB o SEARCH FF
o STILL o SLOW ⊕ o AUDIO DUB PAUSE
o REC PAUSE o TIMER STANDBY STOP REC PAUSE
o SEARCH REW o SLOW ⊖

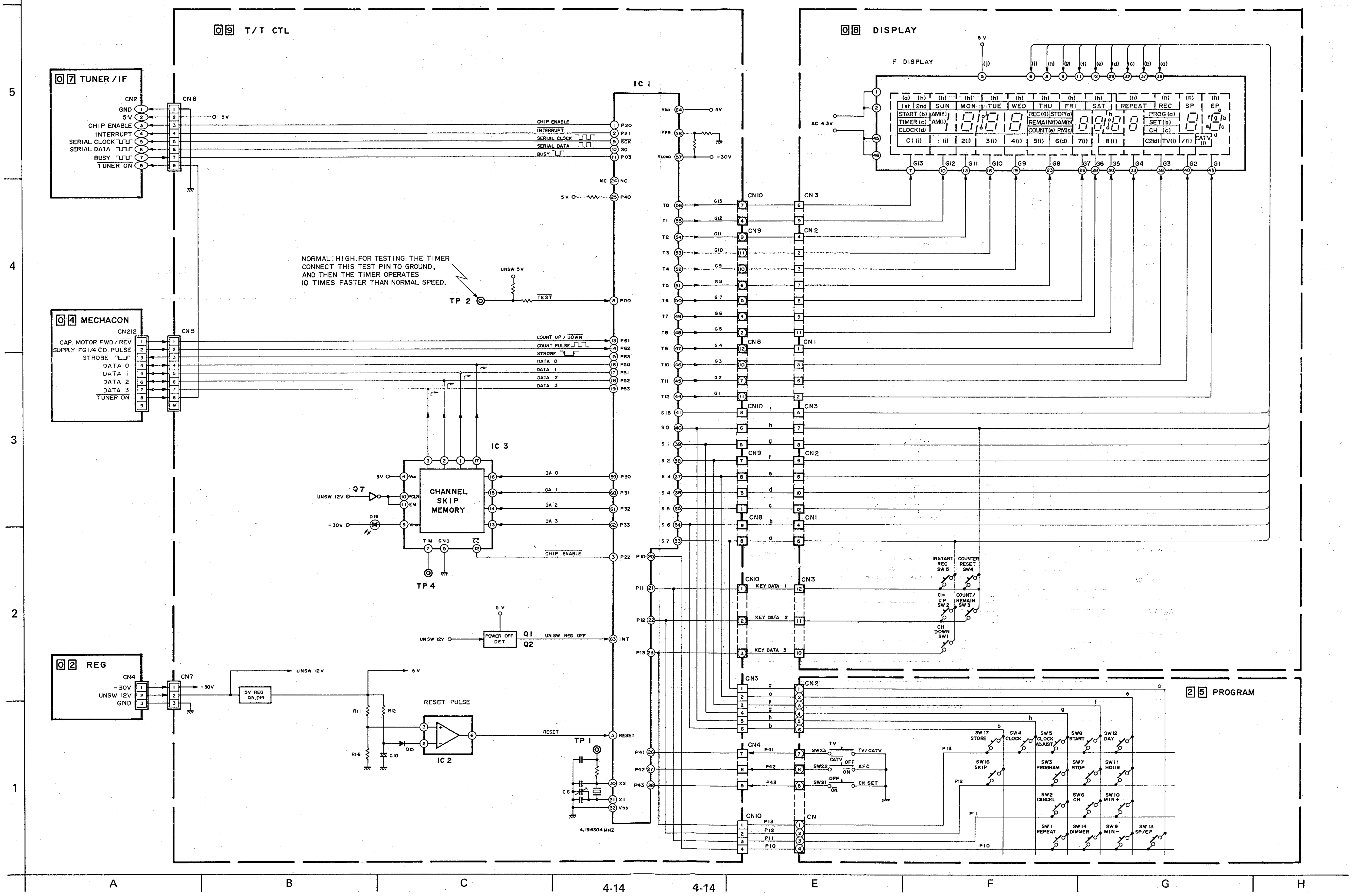

STOP
PLAY
STILL
SEARCH REW
PLAY
NO CTL. PULSE
CTL. PULSE DET.
LOADING SENSOR 1 (IC204-②)
LOADING SENSOR 2 (IC204-③)
MODE CONTROL MOTOR
CAPSTAN MOTOR
DRUM-START (IC204-㉓)
PB VIDEO (IC202-①)
AUDIO MUTING (IC202-⑦,⑧)
CAPSTAN PHASE CTL. (IC204-⑲)
DRUM PHASE CTL. (IC204-⑱)
DECISION (IC204-㉕)
AFTER LOADING (IC204-㉔)
V SCH (IC204-㉖)
LD
PB
PB
S/S
P/S
REV
P/S
S/S
PB
8V
12V
-12V
12V
12V
12V
-12V
-12V
-12V
50ms
4V
IDLER CHANGE
SERVO
※ 6V
REV. BRAKE
-6V
※ -6V
SERVO
※ -6V
IDLER CHANGE 6V
REV. BRAKE
SERVO
※:PREVENT TAPE SLACKING
80ms
700ms
700 ms
800 ms


STILL
INSERT PAUSE
AUDIO CH-1, CH-2 INSERT
AUDIO CH-2 INSERT
AUDIO INSERT OFF
COUNTER "0"
CH-1 AUDIO DUB
CH-1, CH-2 AUDIO DUB
PAUSE
REC
CAPSTAN MOTOR
PB VIDEO (IC202-①)
PB CH-1 (IC202-⑥)
PB CH-2 (IC202-⑤)
REC MUT CH-1 (IC202-⑪)
REC MUT CH-2 (IC202-⑩)
MUT CH-1 (IC202-⑧)
MUT CH-2 (IC202-⑦)
BIAS (IC202-⑫)
CH-1 SW (IC202-③)
CH-2 SW (IC202-②)
CAPSTAN PHASE CTL. (IC204-⑲)
DRUM PHASE CTL. (IC204-⑱)
AFTER LOADING (IC204-㉔)
CUE (IC202-⑬)
80ms
80ms
80ms
80ms
80ms
100ms
700ms
700ms
700ms
700ms
1sec

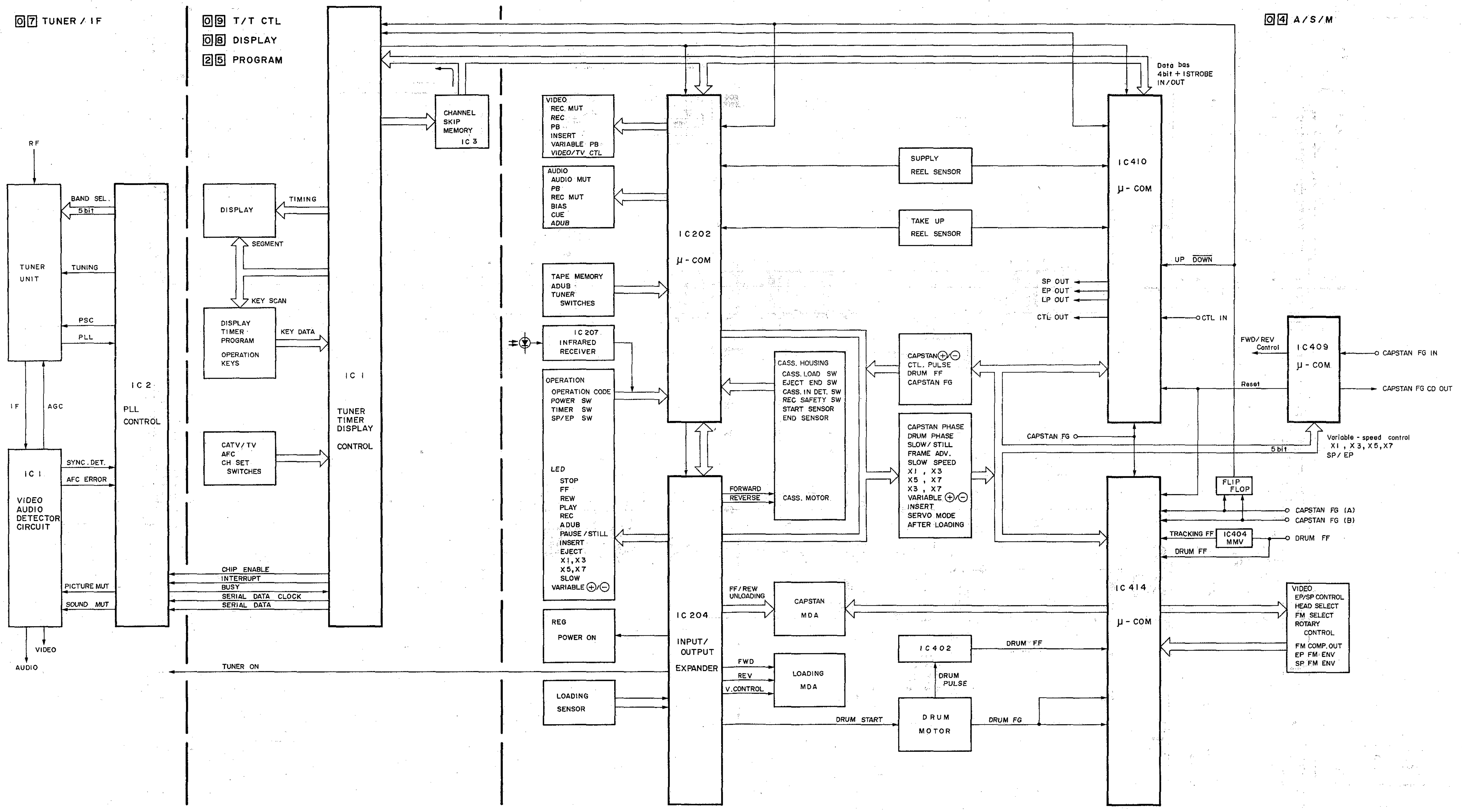

STOP
FF
REW
COUNTER "100" "0"
EJECT
CASSETTE IN
LOADING SENSOR 1 (IC204-②)
LOADING SENSOR 2 (IC204-③)
MODE CONTROL MOTER
CAPSTAN MOTOR
CASSETTE MOTOR
EJECT END SW (IC202-⑮)
CASS. INSERT SW (IC202-㊸)
LOAD END SW (IC202-㊷)
DECISION (IC204-㉕)
-12V
12V
-12V
12V
4V
IDLER CHANGE
12V
PWM CONTROL
REVERSE BRAKE
-12V
-4V
IDLER CHANGE
PWM CONTROL
-12V
12V
REVERSE BRAKE
-4V
SHORT REW
EJECT 10V
-10V CASSETTE LOAD


PLAY
STOP
PLAY
STOP
POWER OFF
LOADING SENSOR 1 (IC204-②)
LOADING SENSOR 2 (IC204-③)
LOADING MOTOR
CAPSTAN MOTOR
PB VIDEO (IC202-①)
AFTER LOADING (IC204-㉔)
AUDIO MUT (IC202-⑦,⑧)
DECISION (IC204-㉕)
PL
LD
-12V
100ms
-8V
8V
IDLER CHANGE
250ms
-8V
REV. BRAKE
REV. BRAKE
2.2 sec

## 4.12 TUNER/TIMER CTL, DISPLAY AND PROGRAM BLOCK DIAGRAMS

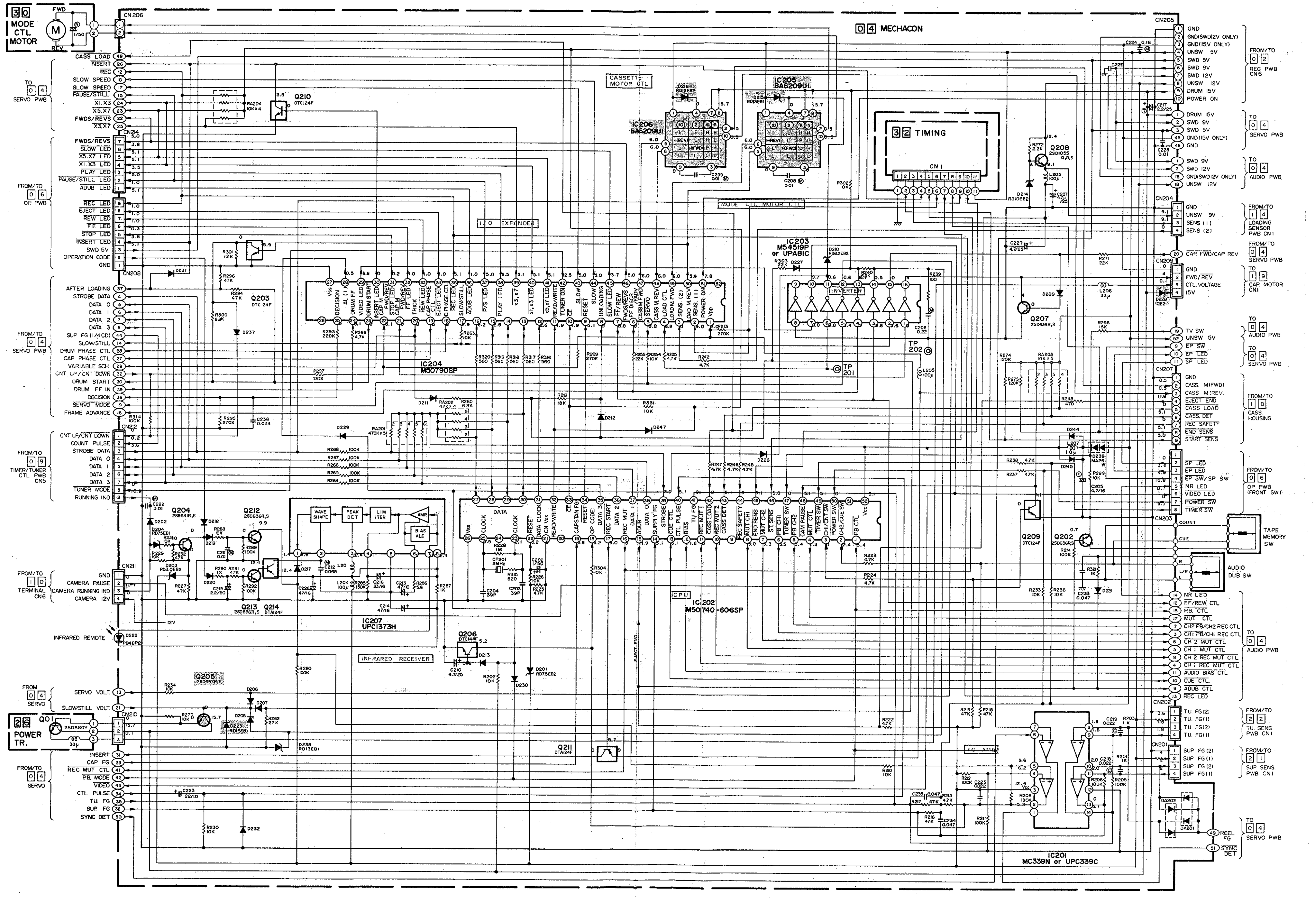

6
5
4
3
2
1
09 T/T CTL
08 DISPLAY
07 TUNER/IF
04 MECHACON
02 REG
25 PROGRAM
IC 1
IC 2
IC 3
CN2
GND
5V
CHIP ENABLE
INTERRUPT
SERIAL CLOCK
SERIAL DATA
BUSY
TUNER ON
CN6
CN212
CAP. MOTOR FWD / REV
SUPPLY FG 1/4 CD. PULSE
STROBE
DATA 0
DATA 1
DATA 2
DATA 3
CN5
CN4
-30V
UNSW 12V
CN7
5V REG Q5, D19
NORMAL: HIGH. FOR TESTING THE TIMER CONNECT THIS TEST PIN TO GROUND, AND THEN THE TIMER OPERATES 10 TIMES FASTER THAN NORMAL SPEED.
TP 2
UNSW 5V
TEST
CHANNEL SKIP MEMORY
Q7
D16
TP 4
POWER OFF DET
Q1
Q2
UNSW REG OFF
RESET PULSE
R11
R12
R16
C10
D15
RESET
TP 1
C6
4,194304 MHZ
VDD
VPP
VLOAD
CHIP ENABLE
CN10
CN9
CN8
CN3
CN2
CN1
KEY DATA 1
KEY DATA 2
KEY DATA 3
F DISPLAY
AC 4.3V
1st 2nd SUN MON TUE WED THU FRI SAT REPEAT REC SP EP
START (b) TIMER (c) CLOCK (d) AM(f) AM(i)
REC (g) STOP (a) REMAIN (f) AM (b) COUNT (e) PM (c)
PROG (a) SET (b) CH (c)
C1 (i) 1 (i) 2 (i) 3 (i) 4 (i) 5 (i) 6 (d) 7 (i) 8 (i) C2 (d) TV (i) / (i) CATV (i)
G13 G12 G11 G10 G9 G8 G7 G6 G5 G4 G3 G2 G1
INSTANT REC SW5
COUNTER RESET SW4
CH UP SW2
COUNT/REMAIN SW3
CH DOWN SW1
SW17 STORE
SW4 CLOCK
SW5 CLOCK ADJUST
SW8 START
SW12 DAY
SW16 SKIP
SW3 PROGRAM
SW7 STOP
SW11 HOUR
SW2 CANCEL
SW6 CH
SW10 MIN+
SW1 REPEAT
SW14 DIMMER
SW9 MIN-
SW13 SP/EP
SW23 TV CATV TV/CATV
SW22 OFF ON AFC
SW21 OFF ON CH SET
A
B
C
E
F
G
H

## 4.13 MICROPROCESSOR SYSTEM BLOCK DIAGRAM


07 TUNER / IF
09 T/T CTL
08 DISPLAY
25 PROGRAM
04 A/S/M
RF
BAND SEL.
5bit
TUNER UNIT
TUNING
PSC
PLL
IF
AGC
IC 1
VIDEO AUDIO DETECTOR CIRCUIT
SYNC. DET.
AFC ERROR
PICTURE MUT
SOUND MUT
VIDEO
AUDIO
IC 2
PLL CONTROL
DISPLAY
TIMING
SEGMENT
KEY SCAN
DISPLAY TIMER PROGRAM
OPERATION KEYS
KEY DATA
CATV/TV AFC CH SET SWITCHES
IC 1
TUNER TIMER DISPLAY CONTROL
CHIP ENABLE
INTERRUPT
BUSY
SERIAL DATA CLOCK
SERIAL DATA
TUNER ON
CHANNEL SKIP MEMORY IC 3
VIDEO
REC MUT
REC
PB
INSERT
VARIABLE PB
VIDEO/TV CTL
AUDIO
AUDIO MUT
PB
REC MUT
BIAS
CUE
ADUB
TAPE MEMORY ADUB TUNER SWITCHES
IC 207 INFRARED RECEIVER
OPERATION
OPERATION CODE
POWER SW
TIMER SW
SP/EP SW
LED
STOP
FF
REW
PLAY
REC
ADUB
PAUSE / STILL
INSERT
EJECT
X1, X3
X5, X7
SLOW
VARIABLE ⊕/⊖
REG POWER ON
LOADING SENSOR
IC 202 µ-COM
IC 204 INPUT/ OUTPUT EXPANDER
CASS. HOUSING
CASS. LOAD SW
EJECT END SW
CASS. IN DET. SW
REC SAFETY SW
START SENSOR
END SENSOR
CASS. MOTOR
FORWARD
REVERSE
FF/REW UNLOADING
CAPSTAN MDA
FWD
REV
V.CONTROL
LOADING MDA
DRUM START
SUPPLY REEL SENSOR
TAKE UP REEL SENSOR
CAPSTAN ⊕/⊖
CTL. PULSE
DRUM FF
CAPSTAN FG
CAPSTAN PHASE
DRUM PHASE
SLOW / STILL
FRAME ADV.
SLOW SPEED
X1 , X3
X5 , X7
X3 , X7
VARIABLE ⊕/⊖
INSERT
SERVO MODE
AFTER LOADING
IC 402
DRUM FF
DRUM PULSE
DRUM MOTOR
DRUM FG
Data bus 4bit + 1STROBE IN/OUT
IC410 µ-COM
UP DOWN
SP OUT
EP OUT
LP OUT
CTL OUT
CTL IN
FWD/REV Control
Reset
IC409 µ-COM
CAPSTAN FG IN
CAPSTAN FG CD OUT
CAPSTAN FG
5 bit
Variable - speed control X1 , X3, X5, X7 SP/EP
FLIP FLOP
CAPSTAN FG (A)
CAPSTAN FG (B)
TRACKING FF
IC404 MMV
DRUM FF
DRUM FF
IC 414 µ-COM
VIDEO
EP/SP CONTROL
HEAD SELECT
FM SELECT
ROTARY CONTROL
FM COMP. OUT
EP FM ENV
SP FM ENV

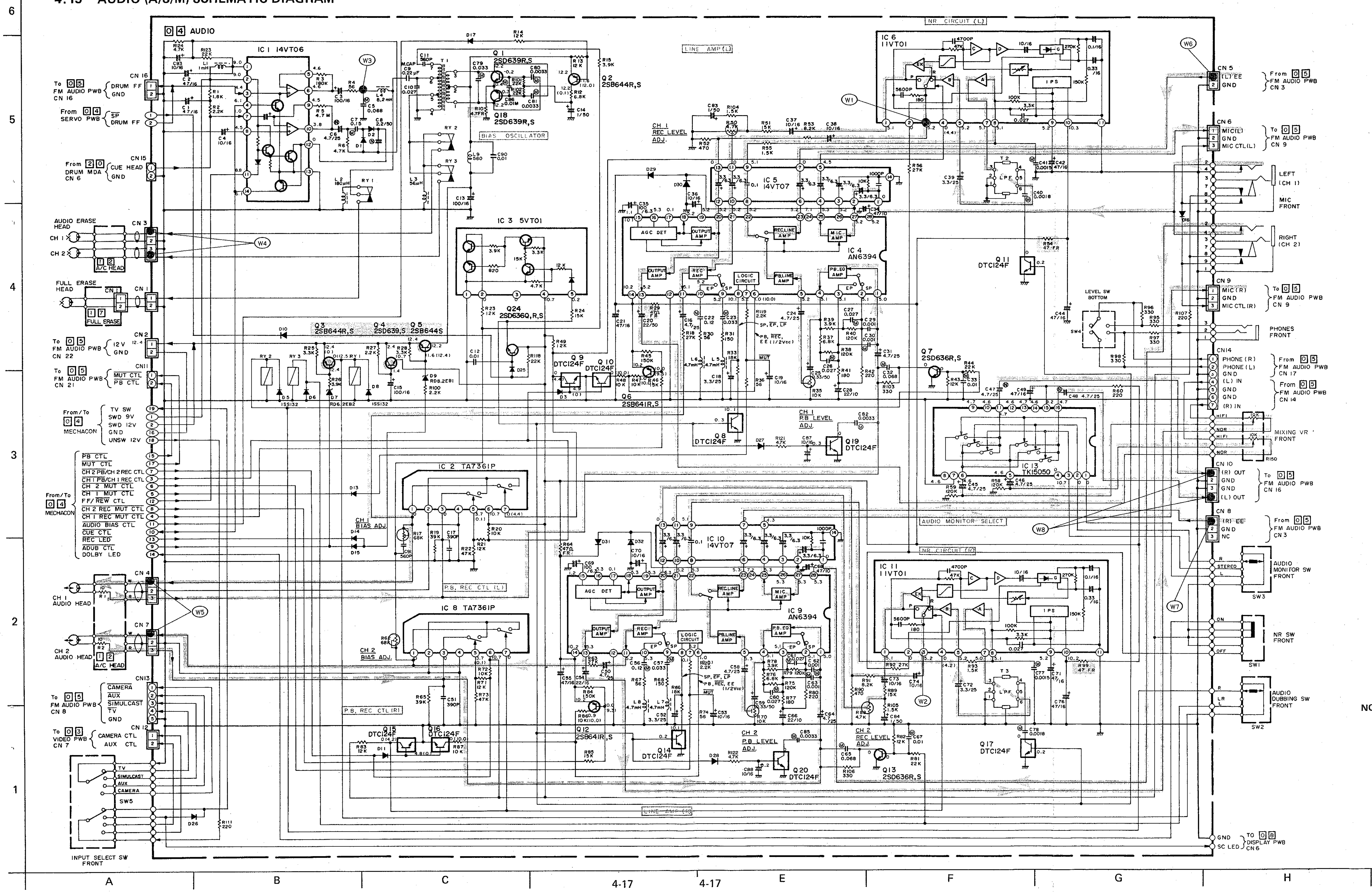
## 4.14 MECHANISM CONTROL (A/S/M) SCHEMATIC DIAGRAM

NOTES: Unless otherwise specified.
1. All resistance values are in ohms. (1/6 W).
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. All diodes are 1SS133 (903 –864)
5. Voltages are DC-measured with a digital voltmeter during stop mode.
6. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.



30 MODE CTL MOTOR
FWD
REV
CN206
04 MECHACON
CASS LOAD
INSERT
REC
SLOW SPEED
PAUSE/STILL
X1.X3
X5.X7
FWDS/REVS
X3X7
TO 04 SERVO PWB
FROM/TO 06 OP PWB
FROM/TO 04 SERVO PWB
FROM/TO 09 TIMER/TUNER CTL PWB CN5
FROM/TO 10 TERMINAL CN6
CN214
CN208
CN212
CN211
CN210
Q210 DTC124F
Q203 DTC124F
Q204 2SB641R,S
Q212 2SD636R,S
Q213 2SD636R,S
Q214 DTA124F
Q205 2SD637R,S
Q206 DTC144F
Q207 2SD636R,S
Q208 2SD1055
Q209 DTC124F
Q202 2SD636R,S
Q211 DTA124F
CASSETTE MOTOR CTL
IC206 BA6209U1
IC205 BA6209U1
32 TIMING
CN1
MODE CTL MOTOR CTL
I/O EXPANDER
IC203 M54519P or UPA81C
INVERTER
IC204 M50790SP
IC207 UPC1373H
WAVE SHAPE
PEAK DET
LIMITER
AMP
BIAS ALC
INFRARED RECEIVER
INFRARED REMOTE
IC202 M50740-606SP
CPU
IC201 MC339N or UPC339C
FG AMP
26 POWER TR.
Q01 2SD880Y
SERVO VOLT
SLOW/STILL VOLT
INSERT
CAP FG
REC MUT CTL
PB MODE
VIDEO
CTL PULSE
TU. FG
SUP. FG
SYNC DET
FROM 04 SERVO
FROM/TO 04 SERVO
CN205
GND
UNSW 5V
SWD 5V
SWD 9V
SWD 12V
UNSW 12V
DRUM 15V
POWER ON
FROM/TO 02 REG PWB CN6
TO 04 SERVO PWB
TO 04 AUDIO PWB
CN204
FROM/TO 14 LOADING SENSOR PWB CN1
CAP FWD/CAP REV
CN209
FWD/REV
CTL VOLTAGE
TO 19 CAP. MOTOR CN1
TV SW
EP SW
EP LED
SP LED
CN207
CASS M(FWD)
CASS M(REV)
EJECT END
CASS LOAD
CASS DET
REC SAFETY
END SENS
START SENS
FROM/TO 18 CASS HOUSING
SP LED
EP LED
EP SW/SP SW
NR LED
VIDEO LED
POWER SW
TIMER SW
FROM/TO 06 OP PWB (FRONT SW)
CN203
COUNT
CUE
TAPE MEMORY SW
AUDIO DUB SW
NR LED
FF/REW CTL
PB. CTL
MUT CTL
CH2 PB/CH2 REC CTL
CH1 PB/CH1 REC CTL
CH 2 MUT CTL
CH 1 MUT CTL
CH 2 REC MUT CTL
CH 1 REC MUT CTL
AUDIO BIAS CTL
CUE CTL
ADUB CTL
REC LED
TO 04 AUDIO PWB
CN202
TU. FG(2)
TU. FG(1)
FROM/TO 22 TU. SENS PWB CN1
CN201
SUP FG(2)
SUP FG(1)
FROM/TO 21 SUP SENS PWB CN1
REEL FG
SYNC DET
TO 04 SERVO PWB
TP 201
TP 202
A
B
C
D
E
F
G
H
1
2
3
4
5
6

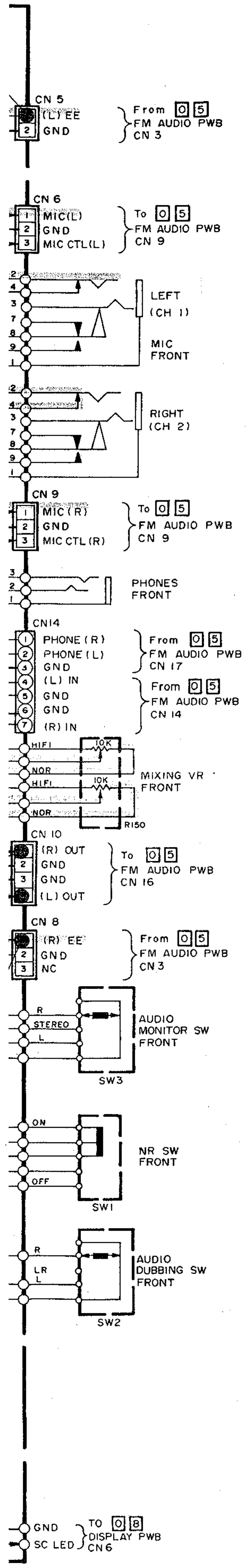
## 4.15 AUDIO (A/S/M) SCHEMATIC DIAGRAM



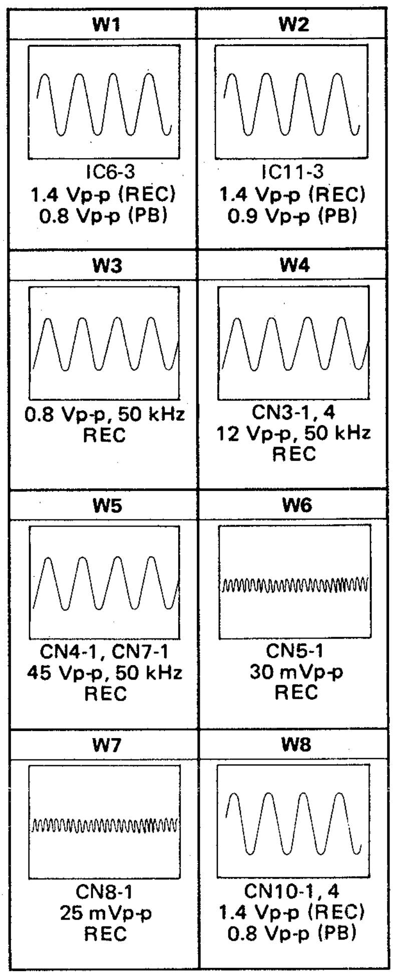
6
5
4
3
2
1
04 AUDIO
IC 1 14VT06
Q 1 2SD639R,S
Q 2 2SB644R,S
Q18 2SD639R,S
BIAS OSCILLATOR
IC 3 5VT01
Q24 2SD636Q,R,S
Q3 2SB644R,S
Q 4 2SD639,S
Q 5 2SB644S
Q 9 DTC124F
Q 10 DTC124F
Q6 2SB641R,S
LINE AMP (L)
CH 1 REC LEVEL ADJ.
IC 5 14VT07
IC 4 AN6394
AGC DET
OUTPUT AMP
REC LINE AMP
MIC AMP
REC AMP
LOGIC CIRCUIT
PB LINE AMP
PB EQ AMP
NR CIRCUIT (L)
IC 6 11VT01
IPS
LPF
Q 11 DTC124F
Q 7 2SD636R,S
Q8 DTC124F
CH 1 PB LEVEL ADJ.
Q19 DTC124F
IC 13 TK15050
AUDIO MONITOR SELECT
IC 2 TA7361P
CH 1 BIAS ADJ.
P.B, REC CTL (L)
IC 8 TA7361P
CH 2 BIAS ADJ.
P.B, REC CTL (R)
Q15 DTC124F
Q16 DTC124F
IC 10 14VT07
IC 9 AN6394
Q12 2SB641R,S
Q14 DTC124F
CH 2 PB LEVEL ADJ.
Q 20 DTC124F
CH 2 REC LEVEL ADJ.
Q13 2SD636R,S
NR CIRCUIT (R)
IC 11 11VT01
Q 17 DTC124F
LINE AMP (R)
W1
W2
W3
W4
W5
W6
W7
W8
CN 16
To 05 FM AUDIO PWB CN 16
DRUM FF
GND
From 04 SERVO PWB
SP DRUM FF
CN15
From 20 DRUM MDA CN 6
CUE HEAD
GND
AUDIO ERASE HEAD
CH 1
CH 2
CN 3
12 A/C HEAD
FULL ERASE HEAD
CN 1
17 FULL ERASE
CN 2
To 05 FM AUDIO PWB CN 22
12V
GND
CN11
To 05 FM AUDIO PWB CN 21
MUT CTL
PB CTL
From/To 04 MECHACON
TV SW
SWD 9V
SWD 12V
GND
UNSW 12V
From/To 04 MECHACON
PB CTL
MUT CTL
CH 2 PB/CH 2 REC CTL
CH 1 PB/CH 1 REC CTL
CH 2 MUT CTL
CH 1 MUT CTL
FF/REW CTL
CH 2 REC MUT CTL
CH 1 REC MUT CTL
AUDIO BIAS CTL
CUE CTL
REC LED
ADUB CTL
DOLBY LED
CN 4
CH 1 AUDIO HEAD
CN 7
CH 2 AUDIO HEAD
12 A/C HEAD
CN13
To 05 FM AUDIO PWB CN 8
CAMERA
AUX
SIMULCAST
TV
GND
CN 12
To 03 VIDEO PWB CN 7
CAMERA CTL
AUX CTL
TV
SIMULCAST
AUX
CAMERA
SW5
INPUT SELECT SW FRONT
CN 5
From 05 FM AUDIO PWB CN 3
(L) EE
GND
CN 6
To 05 FM AUDIO PWB CN 9
MIC (L)
GND
MIC CTL (L)
LEFT (CH 1)
MIC FRONT
RIGHT (CH 2)
CN 9
To 05 FM AUDIO PWB CN 9
MIC (R)
GND
MIC CTL (R)
LEVEL SW BOTTOM
SW4
PHONES FRONT
CN14
From 05 FM AUDIO PWB CN 17
PHONE (R)
PHONE (L)
GND
(L) IN
From 05 FM AUDIO PWB CN 14
GND
GND
(R) IN
HIFI
NOR
MIXING VR FRONT
CN 10
To 05 FM AUDIO PWB CN 16
(R) OUT
GND
GND
(L) OUT
CN 8
From 05 FM AUDIO PWB CN 3
(R) EE
GND
NC
R
STEREO
L
AUDIO MONITOR SW FRONT
SW3
ON
OFF
NR SW FRONT
SW1
R
LR
L
AUDIO DUBBING SW FRONT
SW2
GND
SC LED
To 08 DISPLAY PWB CN 6
A
B
C
D
E
F
G
H

NOTES:
1. Al
2. Al
3. Al
4. Al
5. Vc
6. Wl
pl
7. Sh
pa
8. Wa
pl

## 4.16 TIMING SCHEMATIC DIAGRAM AND CIRCUIT BOARD


CN 5
(L) EE
GND
From 05 FM AUDIO PWB CN 3
CN 6
MIC(L)
GND
MIC CTL(L)
To 05 FM AUDIO PWB CN 9
LEFT (CH 1)
MIC FRONT
RIGHT (CH 2)
CN 9
MIC (R)
GND
MIC CTL(R)
To 05 FM AUDIO PWB CN 9
PHONES FRONT
CN14
PHONE (R)
PHONE (L)
GND
(L) IN
GND
GND
(R) IN
From 05 FM AUDIO PWB CN 17
From 05 FM AUDIO PWB CN 14
HIFI
NOR
10K
MIXING VR FRONT
R150
CN 10
(R) OUT
GND
GND
(L) OUT
To 05 FM AUDIO PWB CN 16
CN 8
(R) EE
GND
NC
From 05 FM AUDIO PWB CN 3
R
STEREO
L
AUDIO MONITOR SW FRONT
SW3
ON
OFF
NR SW FRONT
SW1
R
LR
L
AUDIO DUBBING SW FRONT
SW2
GND
SC LED
TO 08 DISPLAY PWB CN 6

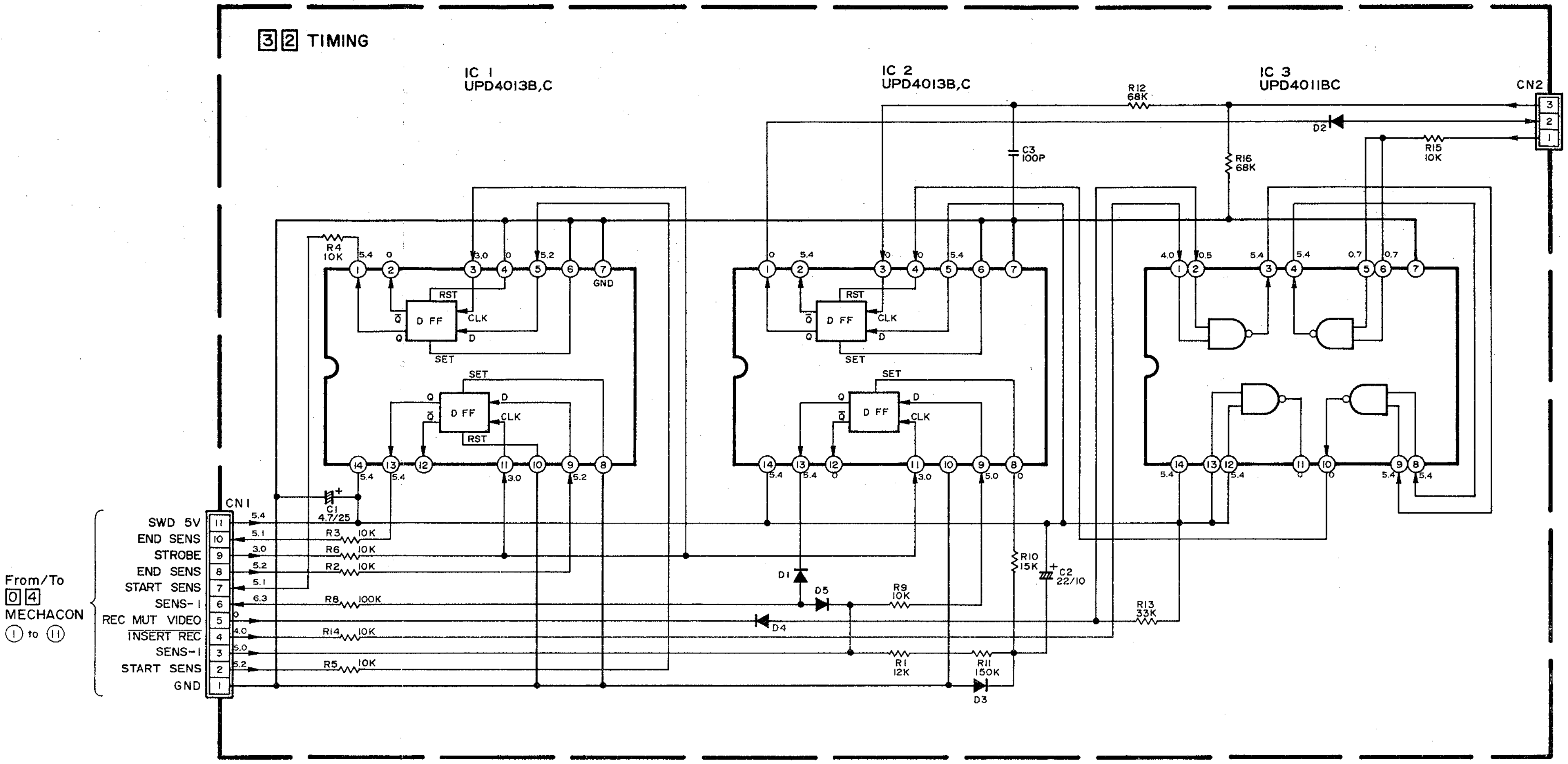
### Waveforms of audio circuit



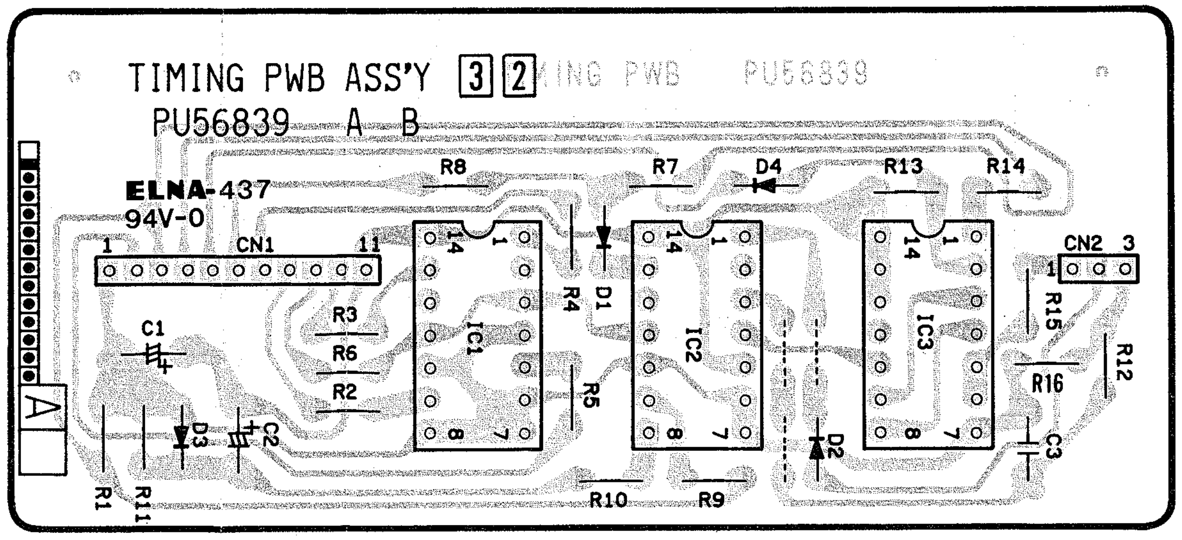
NOTES: Unless otherwise specified.

1. All resistance values are in ohms. (1/6 W).
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. All diodes are 1SS133 (903 – 864)
5. Voltages are DC-measured with a digital voltmeter during recording mode.
6. Where voltage differs between recording and playback, the voltage during playback is shown in parentheses.
7. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.
8. Waveforms are measured with 1 kHz (–8dBs) during recording and playback with alignment tape (1 kHz).

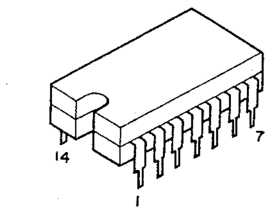
– TIMING –


32 TIMING
IC 1 UPD4013B,C
IC 2 UPD4013B,C
IC 3 UPD4011BC
CN2
NC
NC
NC
R12 68K
R16 68K
R15 10K
D2
C3 100P
R4 10K
RST
SET
D FF
CLK
D
Q
GND
CN 1
SWD 5V
END SENS
STROBE
END SENS
START SENS
SENS-1
REC MUT VIDEO
INSERT REC
SENS-1
START SENS
GND
From/To 04 MECHACON ① to ⑪
C1 4.7/25
R3 10K
R6 10K
R2 10K
R8 100K
R14 10K
R5 10K
D1
D5
D4
R9 10K
R1 12K
R11 150K
D3
R10 15K
C2 22/10
R13 33K
5.4
5.1
3.0
5.2
6.3
4.0
5.0

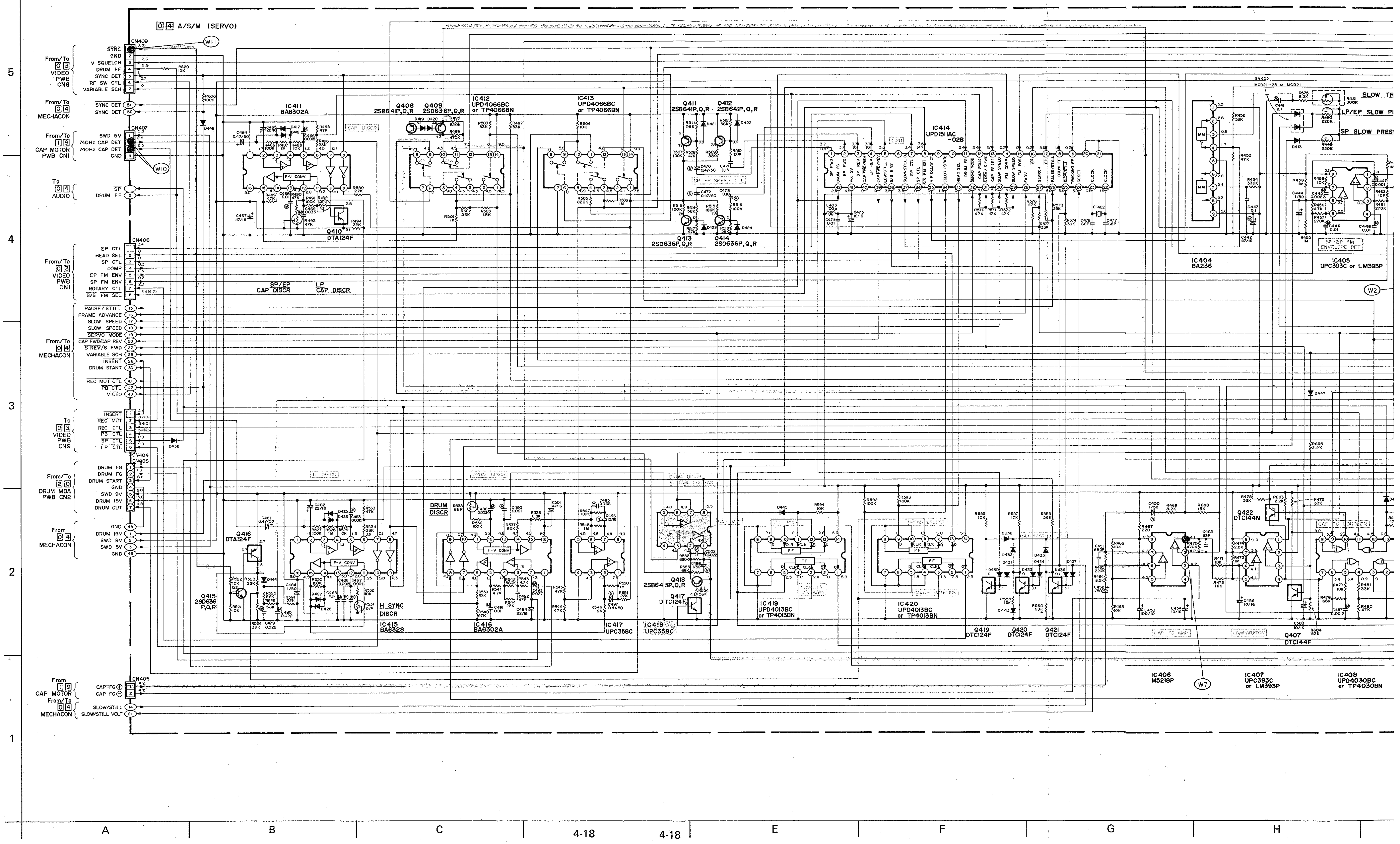
– TIMING BOARD –

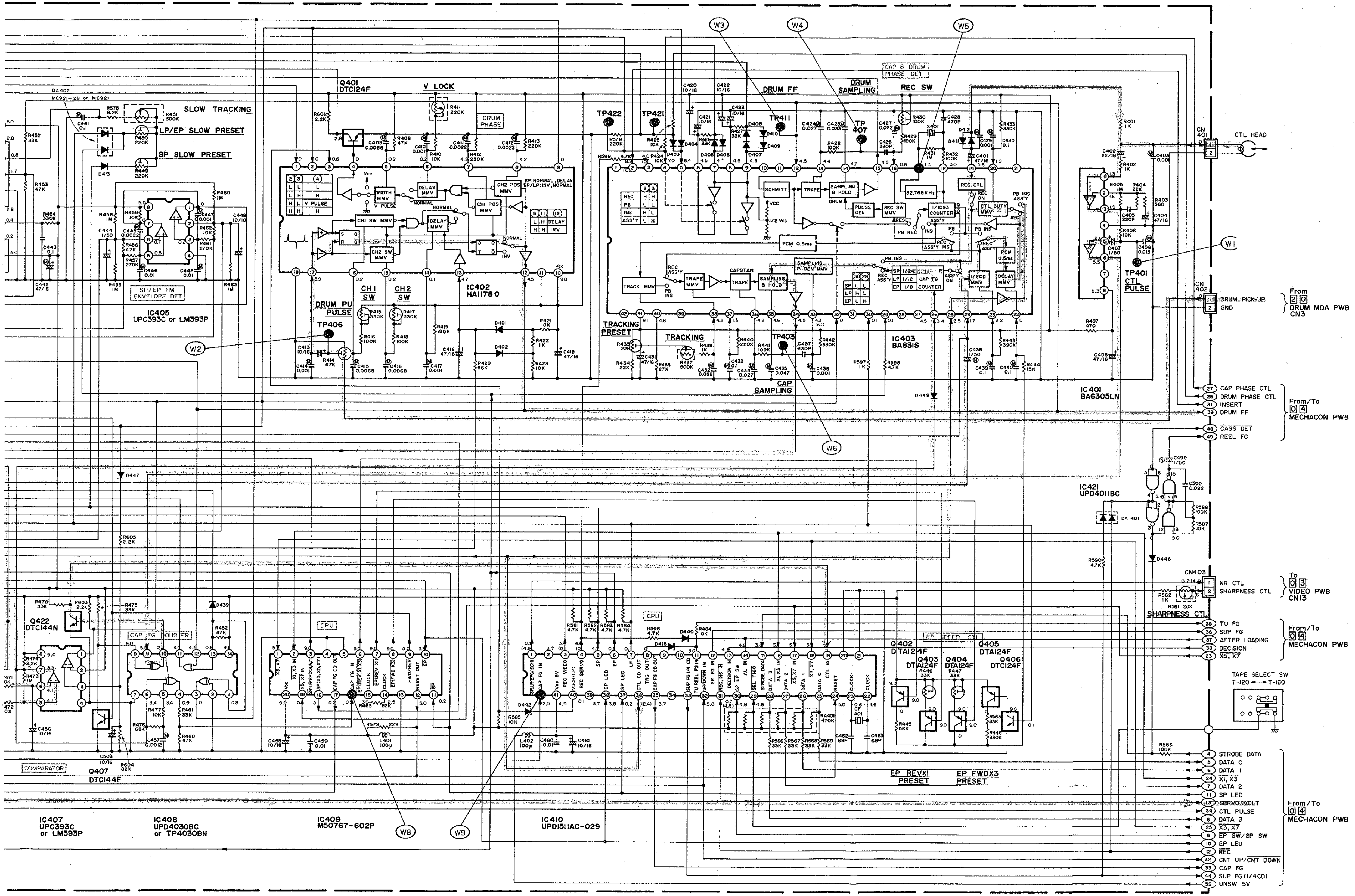

TIMING PWB ASS'Y 32 TIMING PWB PU56839
PU56839 A B
ELNA-437
94V-0
CN1
1
11
C1
R8
R3
R6
R2
D3
C2
R1
R11
IC1
R4
D1
R5
R7
D4
IC2
D2
R10
R9
R13
R14
IC3
CN2
R15
R16
R12
C3
14
8
7
A

UPD4013B,C



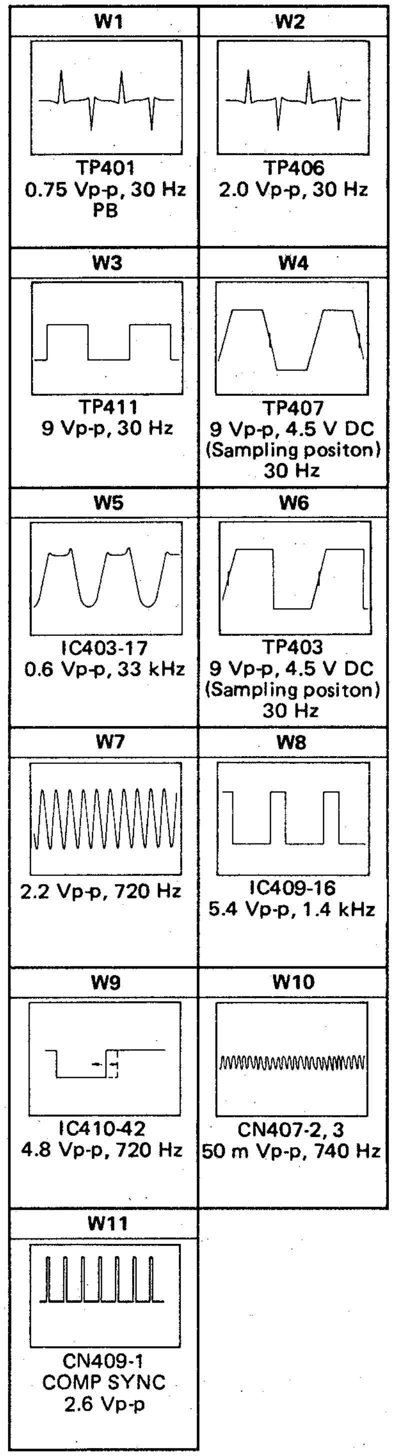
## 4.17 SERVO (A/S/M) SCHEMATIC DIAGRAM


04 A/S/M (SERVO)
CN409
SYNC
GND
V SQUELCH
DRUM FF
SYNC DET
RF SW CTL
VARIABLE SCH
From/To 03 VIDEO PWB CN8
SYNC DET
SYNC DET
From/To 04 MECHACON
CN407
SWD 5V
740Hz CAP DET
740Hz CAP DET
GND
From/To 19 CAP MOTOR PWB CN1
To 04 AUDIO
SP
DRUM FF
CN406
EP CTL
HEAD SEL
SP CTL
COMP
EP FM ENV
SP FM ENV
ROTARY CTL
S/S FM SEL
From/To 03 VIDEO PWB CN1
SP/EP CAP DISCR
LP CAP DISCR
PAUSE/STILL
FRAME ADVANCE
SLOW SPEED
SLOW SPEED
SERVO MODE
CAP FWD/CAP REV
S REV/S FWD
VARIABLE SCH
INSERT
DRUM START
REC MUT CTL
PB CTL
VIDEO
From/To 04 MECHACON
INSERT
REC MUT
REC CTL
PB CTL
SP CTL
LP CTL
To 03 VIDEO PWB CN9
CN404
CN408
DRUM FG
DRUM FG
DRUM START
GND
SWD 9V
DRUM 15V
DRUM OUT
From/To 20 DRUM MDA PWB CN2
GND
DRUM 15V
SWD 9V
SWD 5V
GND
From 04 MECHACON
CN405
CAP FG(+)
CAP FG(−)
From 19 CAP MOTOR
SLOW/STILL
SLOW/STILL VOLT
From/To 04 MECHACON
W11
W10
W2
W7
IC411 BA6302A
CAP DISCR
F-V CONV
Q410 DTA124F
Q408 2SB641P,Q,R
Q409 2SD636P,Q,R
IC412 UPD4066BC or TP4066BN
IC413 UPD4066BC or TP4066BN
Q411 2SB641P,Q,R
Q412 2SB641P,Q,R
SP/EP SPEED CTL
Q413 2SD636P,Q,R
Q414 2SD636P,Q,R
IC414 UPD1511AC -028
SP FWD
DRUM FG
EP FWD
Vcc 5V
SP REV
CAP FWD/REV
EP REV
CAP FWD/REV
SLOW/STILL
S/S BIAS
SLOW/STILL
EP CTL
SP CTL
S/S FM SEL
V P DELAY CTL
COLOR ROTATE
HEAD SEL
DRUM FG
SERVO MODE
CAP FG(A)
S REV/S FWD
CAP FG(B)
SLOW SPEED
FM COMP
SLOW SPEED
FM POS
FADV
SP
SEARCH
EP
PAUSE/STILL
DRUM FF
SLOW/STILL
TRACKING FF
RESET
CLOCK
CLOCK
IC404 BA236
DA402 MC921-26 or MC921
SLOW TR
LP/EP SLOW P
SP SLOW PRES
SP/EP FM ENVELOPE DET
IC405 UPC393C or LM393P
Q416 DTA124F
Q415 2SD636 P,Q,R
H DISCR
IC415 BA6328
H SYNC DISCR
DRUM DISCR
IC416 BA6302A
DRUM DISCR
F-V CONV
IC417 UPC358C
DRUM DISCR VOLTAGE FOLLOWER
CAP MIX
IC418 UPC358C
Q418 2SB643P,Q,R
Q417 DTC124F
CTL PULSE
IC419 UPD4013BC or TP4013BN
COUNTER UP/DOWN
HEAD SELECT
IC420 UPD4013BC or TP4013BN
COLOR ROTATION
SLOW/STILL
Q419 DTC124F
Q420 DTC124F
Q421 DTC124F
CAP FG AMP
IC406 M5218P
Q422 DTC144N
COMPARATOR
Q407 DTC144F
IC407 UPC393C or LM393P
CAP FG DOUBLER
IC408 UPD4030BC or TP4030BN
A
B
C
D
E
F
G
H
6
5
4
3
2
1



IC405 UPC393C or LM393P
SP/EP FM ENVELOPE DET
SLOW TRACKING
LP/EP SLOW PRESET
SP SLOW PRESET
Q401 DTC124F
V LOCK
DRUM PHASE
IC402 HA11780
DRUM PU PULSE
CH1 SW
CH2 SW
TP406
TP422
TP421
DRUM FF
DRUM SAMPLING
CAP & DRUM PHASE DET
REC SW
TP411
TP 407
IC403 BA831S
TRACKING PRESET
TRACKING
TP403
CAP SAMPLING
IC401 BA6305LN
TP401 CTL PULSE
CN 401
CTL HEAD
CN 402
DRUM PICK-UP
GND
From 20 DRUM MDA PWB CN3
CAP PHASE CTL
DRUM PHASE CTL
INSERT
DRUM FF
CASS DET
REEL FG
From/To 04 MECHACON PWB
IC421 UPD4011BC
CN403
NR CTL
SHARPNESS CTL
To 03 VIDEO PWB CN13
SHARPNESS CTL
TU FG
SUP FG
AFTER LOADING
DECISION
X5, X7
TAPE SELECT SW T-120 ←→ T-160
STROBE DATA
DATA 0
DATA 1
X1, X3
DATA 2
SP LED
SERVO VOLT
CTL PULSE
DATA 3
X3, X7
EP SW/SP SW
EP LED
REC
CNT UP/CNT DOWN
CAP FG
SUP FG (1/4CD)
UNSW 5V
Q422 DTC144N
CAP FG DOUBLER
COMPARATOR
Q407 DTC144F
CPU
EP SPEED CTL
Q402 DTA124F
Q403 DTA124F
Q404 DTA124F
Q405
Q406 DTC124F
EP REVx1 PRESET
EP FWDx3 PRESET
IC407 UPC393C or LM393P
IC408 UPD4030BC or TP4030BN
IC409 M50767-602P
IC410 UPD1511AC-029
W1
W2
W3
W4
W5
W6
W8
W9

## Waveforms of servo circuit

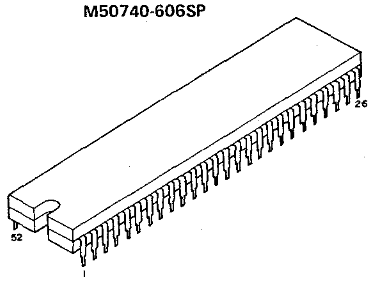


NOTES: Unless otherwise specified.

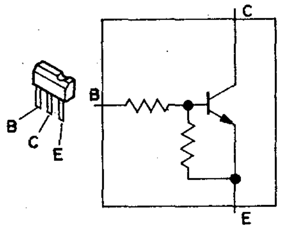
1. All resistance values are in ohms. (1/6 W)
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. All diodes are 1SS133 (903 — 864)
5. Voltages are DC-measured with a digital voltmeter during recording (SP mode).
6. Where voltage differs between recording (SP mode) and playback (SP mode), the voltage during playback is shown in parentheses.
7. Shaded ( ▨ ) parts are critical for safety. Replace only with specified part numbers.
8. The digital transistor is a transistor that includes built in resistors. Both PNP and NPN transistors are available.
9. Waveforms are measured with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.

## 4.18 A/S/M (AUDIO/SERVO/MECHACON), A/CTL HEAD, CASSETTE HOUSING, END SENSOR, SUPPLY SENSOR, LOADING SENSOR, TAKE-UP SENSOR, LED, MODE CTL MOTOR, FULL ERASE HEAD AND POWER TRANSISTOR BOARDS

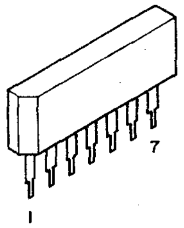
M50790SP
M50740-606SP



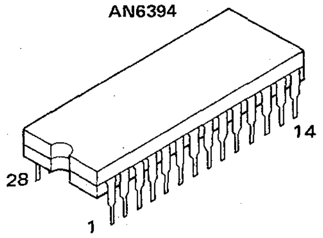
DTC124F



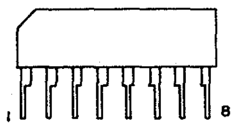
TA7361P



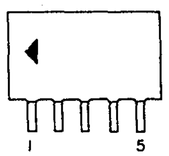
AN6394



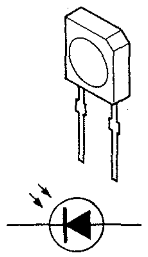
UPC1373H



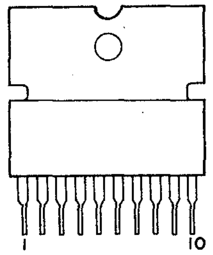
5VT01



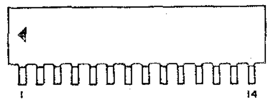
PD48P13



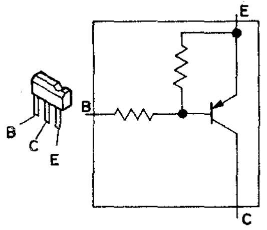
BA6209U1



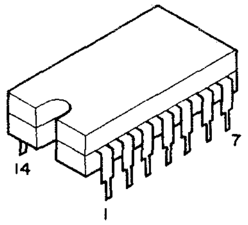
14VT07
14VT06



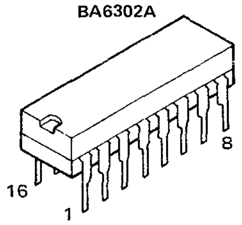
DTA124



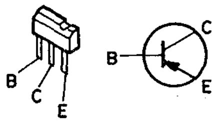
TC4013BP
UPD4013BC



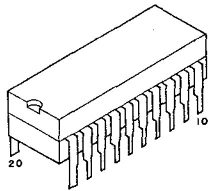
M54519P
BA6325
BA6302A



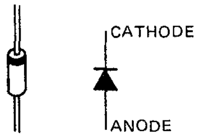
2SB641
2SB644



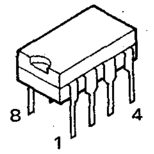
M50767-602P



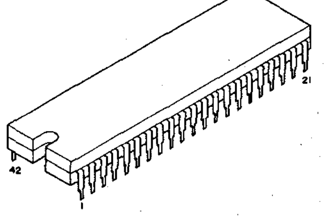
1SS132
1SS133


CATHODE
ANODE

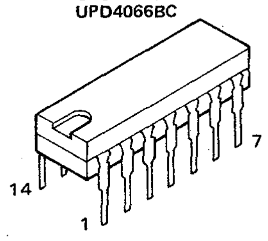
UPC358C
UPC393C
M5218P



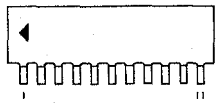
BA831S
UPD1511AC-029
UPD1511AC-028



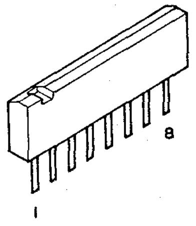
MC339N
UPD4030BC
UPD4066BC



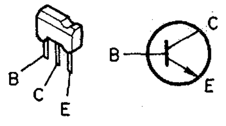
11VT01



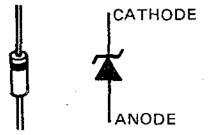
BA236
BA6305LN



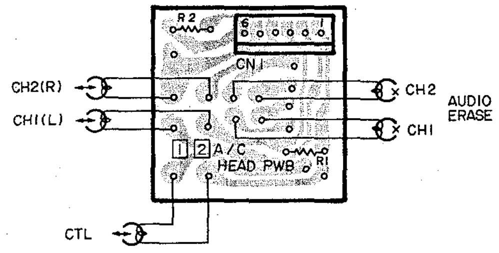
2SD639
2SD1055
2SD637
2SD636



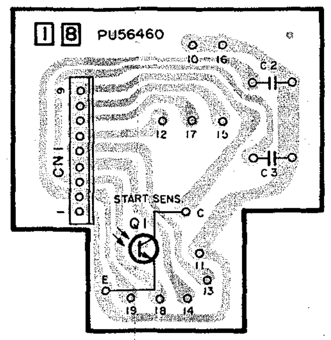
RD8.2EB1
RD6.2EB2
RD10EB1
RD10EB2
RD12EB2
RD13EB1
RD15EB1
10E2


CATHODE
ANODE

### – A/CTL HEAD –

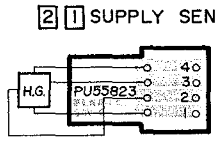

R2
CN1
CH2(R)
CH1(L)
CH2
CH1
AUDIO
ERASE
1 2 A/C HEAD PWB
R1
CTL

### – CASSETTE HOUSING –

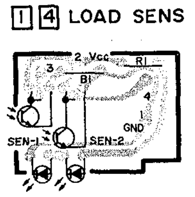

1 8
PU56460
CN1
C2
C3
START SENS.
Q1
12
17
15
10
16
19
14
13
11
E
C

CASS. HOUSING PWB ASS'Y

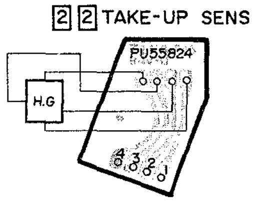
### – SUPPLY SENSOR –

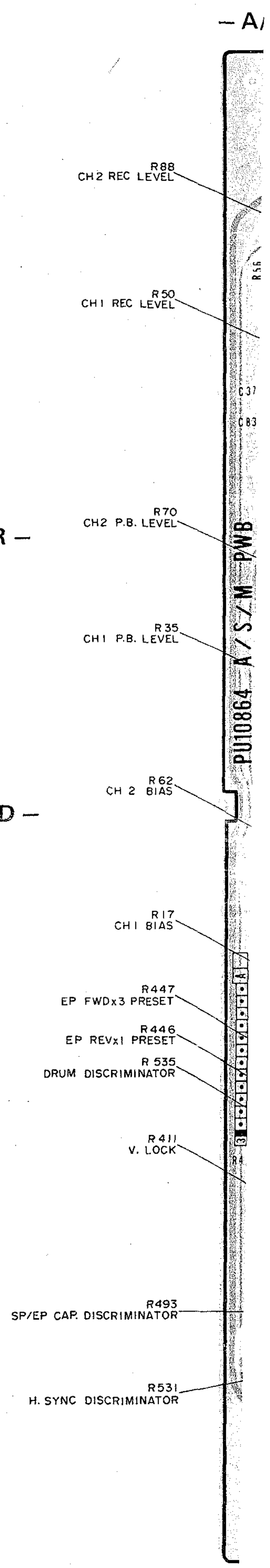

2 1 SUPPLY SENS
H.G.
PU55823
4
3
2
1

### – LOADING SENSOR –

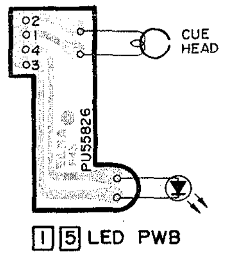

1 4 LOAD SENS
2 Vcc
3
R1
B1
4
1
GND
SEN-1
SEN-2

### – TAKE-UP SENSOR –

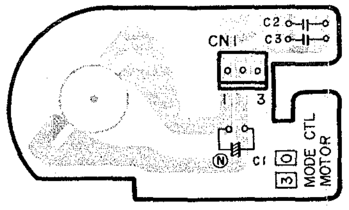

2 2 TAKE-UP SENS
PU55824
H.G


– A/
R88
CH2 REC LEVEL
R50
CH1 REC LEVEL
R70
CH2 P.B. LEVEL
R35
CH1 P.B. LEVEL
R62
CH 2 BIAS
R17
CH1 BIAS
R447
EP FWDx3 PRESET
R446
EP REVx1 PRESET
R535
DRUM DISCRIMINATOR
R411
V. LOCK
R493
SP/EP CAP. DISCRIMINATOR
R531
H. SYNC DISCRIMINATOR
PU10864 A/S/M PWB
C37
C83

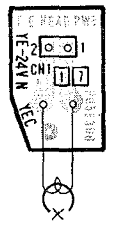
### – LED –


02
01
04
03
CUE
HEAD
PU55826
1 5 LED PWB

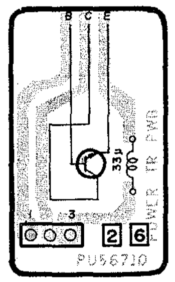
### – MODE CTL MOTOR –


CN1
C2
C3
1
3
C1
0
3
MODE CTL MOTOR

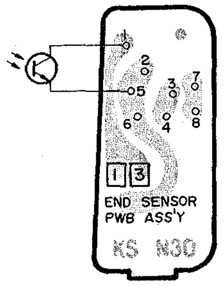
### – FULL ERASE HEAD –

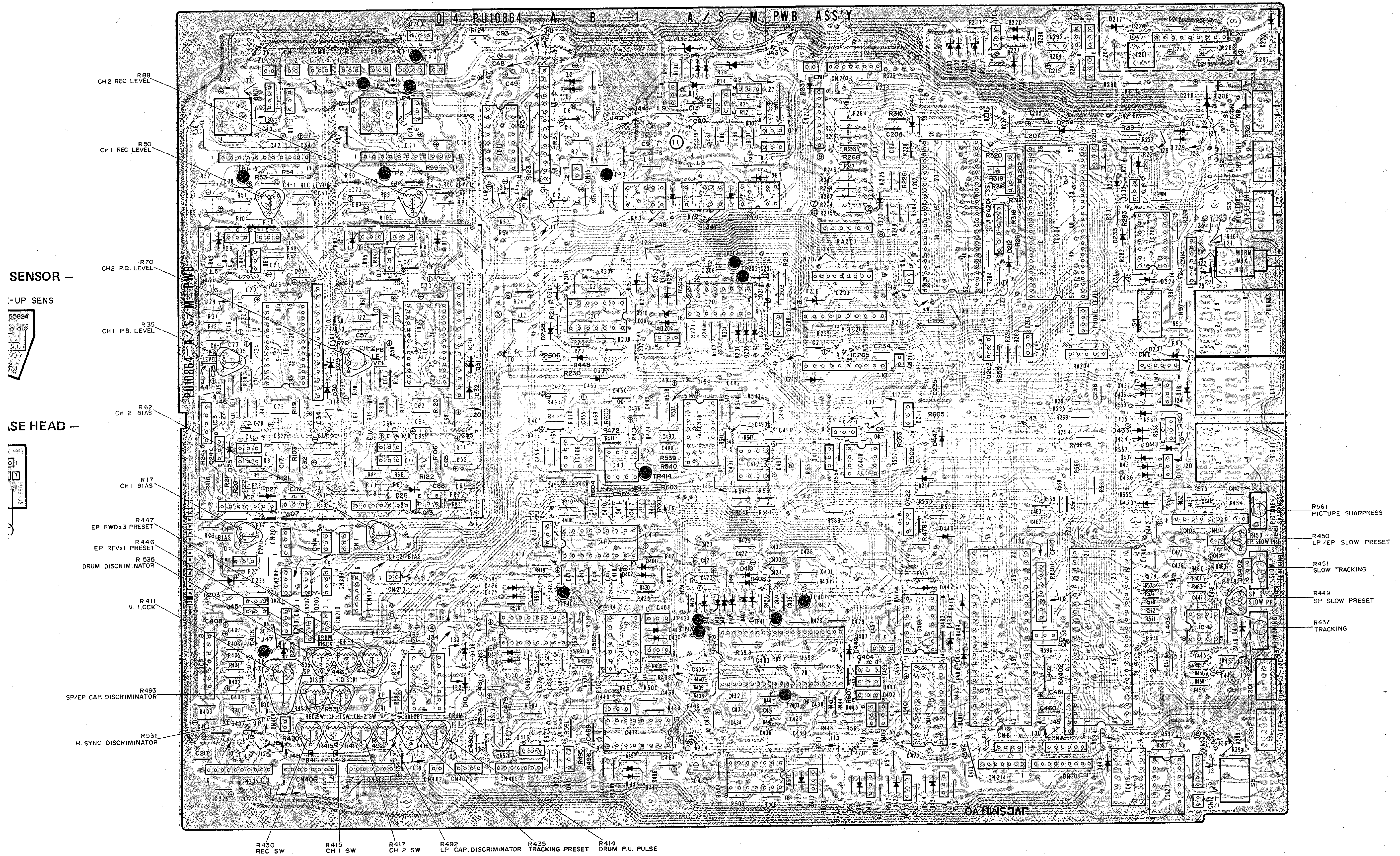

F.E.HEAD PWB
2
1
CN1
1 7
YE-24N
YEL

### – POWER TRANSISTOR –


B C E
2 6
POWER TR PWB
PU56710

### – END SENSOR –

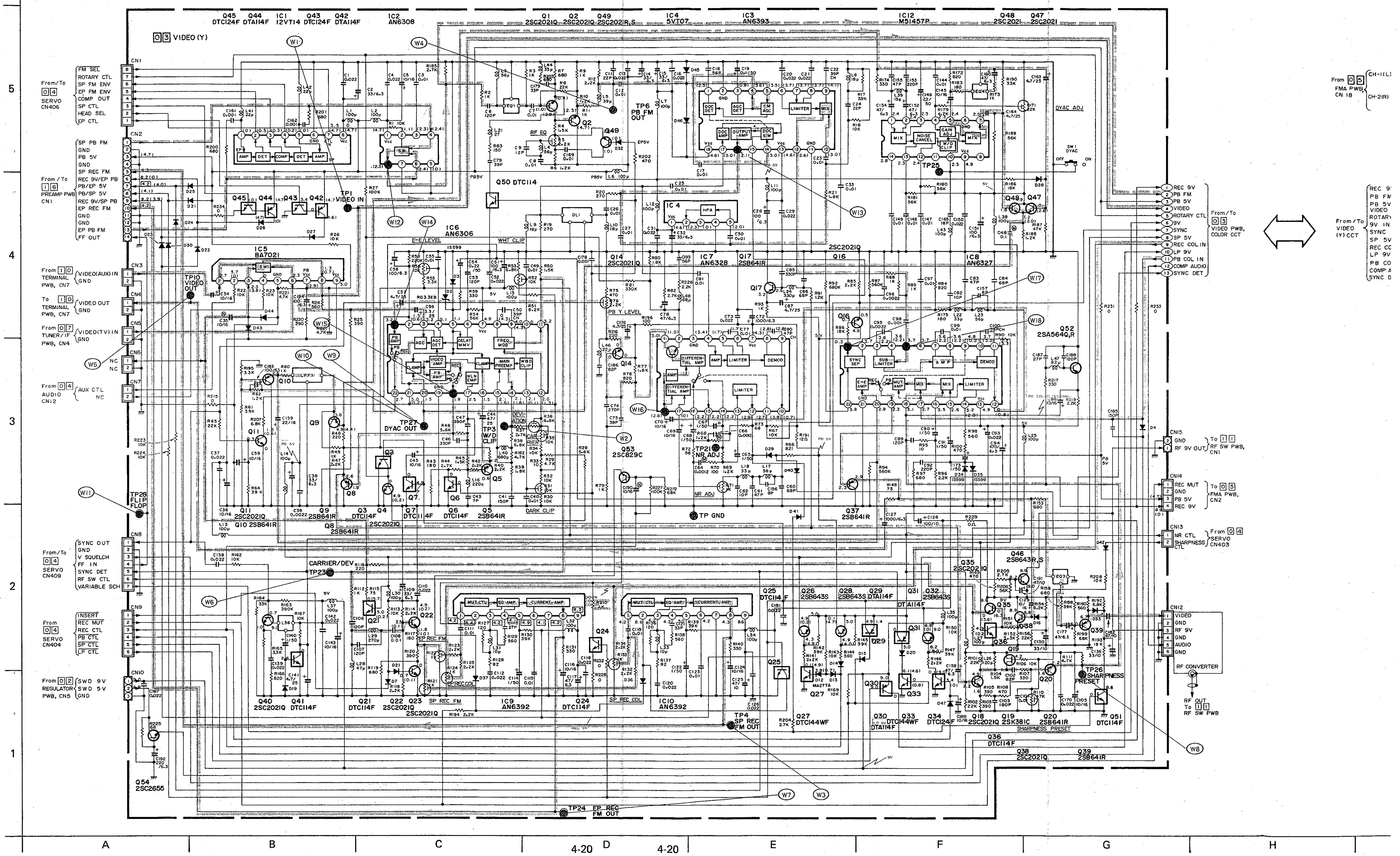

1
2
3
4
5
6
7
8
1 3
END SENSOR PWB ASS'Y
KS N30


SENSOR –
-UP SENS
55824
ASE HEAD –
04 PU10864 A B -1 A/S/M PWB ASS'Y
PU10864 A/S/M PWB
R88
CH2 REC LEVEL
R50
CH1 REC LEVEL
R70
CH2 P.B. LEVEL
R35
CH1 P.B. LEVEL
R62
CH 2 BIAS
R17
CH1 BIAS
R447
EP FWDx3 PRESET
R446
EP REVx1 PRESET
R 535
DRUM DISCRIMINATOR
R411
V. LOCK
R493
SP/EP CAP. DISCRIMINATOR
R531
H. SYNC DISCRIMINATOR
R430
REC SW
R415
CH 1 SW
R417
CH 2 SW
R492
LP CAP. DISCRIMINATOR
R435
TRACKING PRESET
R414
DRUM P.U. PULSE
R561
PICTURE SHARPNESS
R450
LP/EP SLOW PRESET
R451
SLOW TRACKING
R449
SP SLOW PRESET
R437
TRACKING
PHONES
LEFT
RIGHT
MONITOR
PHONE LEVEL
JVCSMITVO

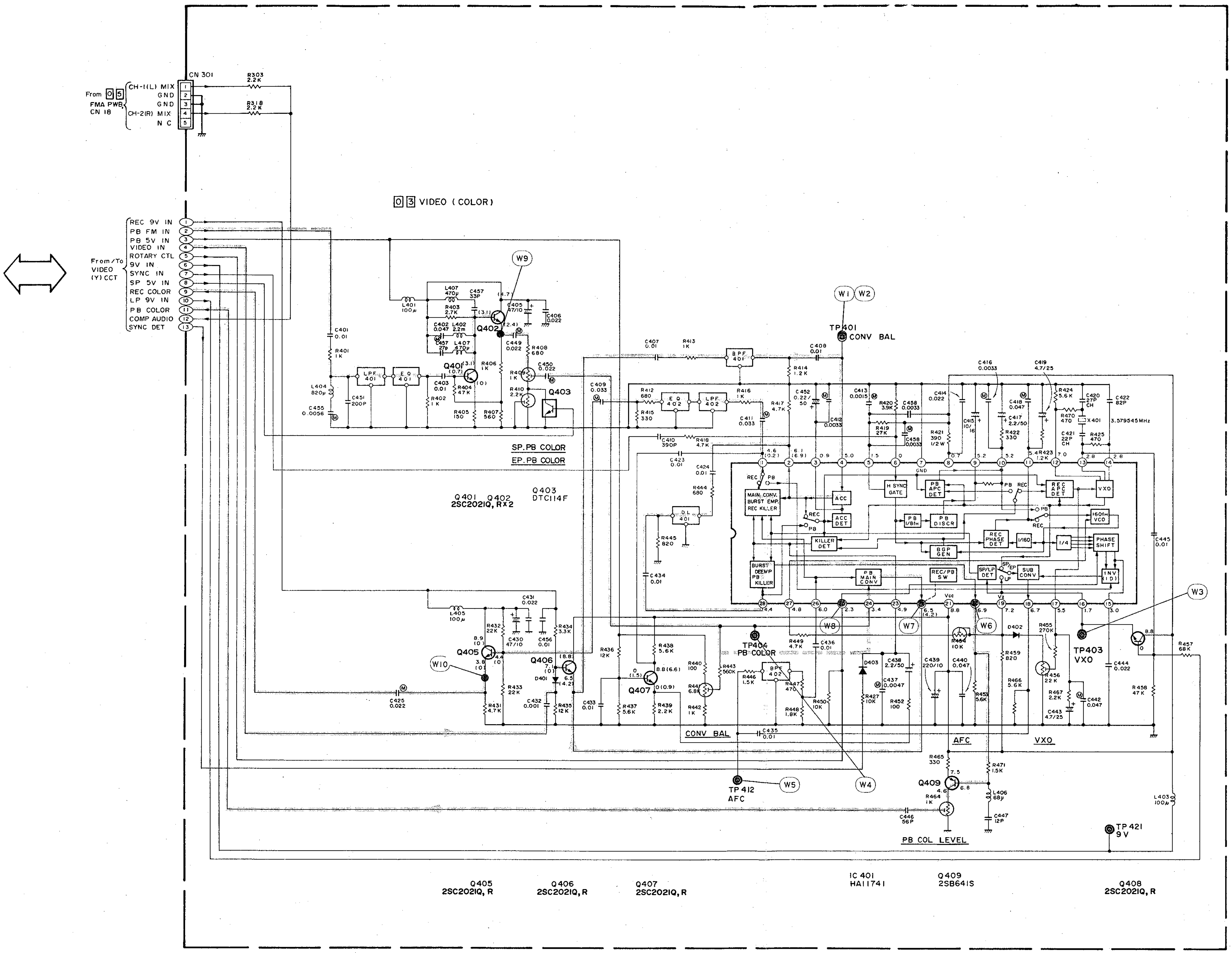
## 4.19 VIDEO SCHEMATIC DIAGRAM

### — Luminance —

— Color


6
5
4
3
2
1
A
B
C
D
E
F
G
H
03 VIDEO (Y)
Q45 DTC124F
Q44 DTA114F
IC1 12VT14
Q43 DTC124F
Q42 DTA114F
IC2 AN6308
Q1 2SC2021Q
Q2 2SC2021Q
Q49 2SC2021R,S
IC4 5VT07
IC3 AN6393
IC12 M51457P
Q48 2SC2021
Q47 2SC2021
CN1
From/To 04 SERVO CN406
FM SEL
ROTARY CTL
SP FM ENV
EP FM ENV
COMP OUT
SP CTL
HEAD SEL
EP CTL
CN2
From/To 16 PREAMP PWB CN1
SP PB FM
GND
PB 5V
GND
SP REC FM
REC 9V/EP PB
PB/EP 5V
PB/SP 5V
REC 9V/SP PB
EP REC FM
GND
GND
EP PB FM
FF OUT
CN3
From 10 TERMINAL PWB, CN7
VIDEO(AUX)IN
GND
CN4
To 10 TERMINAL PWB, CN7
VIDEO OUT
GND
CN5
From 07 TUNER/IF PWB, CN4
VIDEO(TV) IN
GND
CN6
NC
NC
CN7
From 04 AUDIO CN12
AUX CTL
NC
CN8
From/To 04 SERVO CN409
SYNC OUT
GND
V SQUELCH
FF IN
SYNC DET
RF SW CTL
VARIABLE SCH
CN9
From 04 SERVO CN404
INSERT
REC MUT
REC CTL
PB CTL
SP CTL
LP CTL
CN10
From 02 REGULATOR PWB, CN5
SWD 9V
SWD 5V
GND
W1
W2
W3
W4
W5
W6
W7
W8
W9
W10
W11
W12
W13
W14
W15
W16
W17
W18
TP1 VIDEO IN
TP10 VIDEO OUT
TP6 PB FM OUT
TP25
TP27 DYAC OUT
TP3 W/D CLIP
TP21 NR ADJ
TP GND
TP28 FLIP FLOP
TP23 CARRIER/DEV
TP4 SP REC FM OUT
TP24 EP REC FM OUT
TP26 SHARPNESS PRESET
IC5 BA7021
IC6 AN6306
IC7 AN6328
IC8 AN6327
IC9 AN6392
IC10 AN6392
Q50 DTC114
Q14 2SC2021Q
Q17 2SB641R
Q16 2SC2021Q
Q52 2SA564Q,R
Q53 2SC829C
Q11 2SC2021Q
Q10 2SB641R
Q9 2SB641R
Q8 2SB641R
Q3 DTC114F
Q4 2SC2021Q
Q7 DTC114F
Q6 DTC114F
Q5 2SB641R
Q37 2SB641R
Q40 2SC2021Q
Q41 DTC114F
Q21 DTC114F
Q23 2SC2021Q
Q22
Q24 DTC114F
Q25 DTC114F
Q26 2SB643S
Q28 2SB643S
Q29 DTA114F
Q31 DTA114F
Q32 2SB643S
Q27 DTC144WF
Q30 DTA114F
Q33 DTC144WF
Q34 DTC124F
Q35 2SC2021Q
Q46 2SB643R,S
Q18 2SC2021Q
Q19 2SK381C
Q20 2SB641R
Q51 DTC114F
Q36 DTC114F
Q38 2SC2021Q
Q39 2SB641R
Q54 2SC2655
SW1 DYAC
OFF
ON
DYAC ADJ
E-E LEVEL
WHT CLIP
DARK CLIP
DEVIATION
CARRIER
PB Y LEVEL
NR ADJ
DL1
RF EQ
SP REC FM
SP REC COL
EP REC FM
EP REC COL
SHARPNESS PRESET
SYNC SEP
SUB LIMITER
DIFFERENTIAL AMP
LIMITER
DEMOD
MIX
NOISE CANCEL
GAIN ADJ
W/D CLIP
DOC DET
AGC DET
FM AGC
DOC AMP
OUTPUT AMP
DOC SW
HPA
AMP
DET
COMP
AGC
DELAY MMV
FREQ MOD
VIDEO AMP
PB AMP
CLAMP
MAIN PREEMP
WBD CLIP
NLN EMP
MUT CTL
EQ AMP
CURRENT AMP
E-E AMP
MUT AMP
CN15
To 11 RF SW PWB, CN1
GND
RF 9V OUT
CN14
To 05 FMA PWB, CN2
REC MUT
GND
PB 5V
REC 9V
CN13
From 04 SERVO CN403
NR CTL
SHARPNESS CTL
CN12
VIDEO
GND
RF 9V
GND
AUDIO
GND
RF CONVERTER
RF OUT To 11 RF SW PWB
From/To 03 VIDEO PWB, COLOR CCT
REC 9V
PB FM
PB 5V
VIDEO
ROTARY CTL
9V
SYNC
SP 5V
REC COL IN
LP 9V
PB COL IN
COMP AUDIO
SYNC DET
From 05 FMA PWB CN 18
CH-1(L)
CH-2(R)
From/To VIDEO (Y) CCT

## — Color —

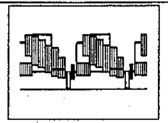
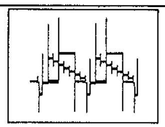
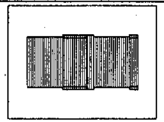
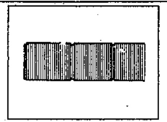
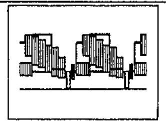
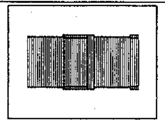
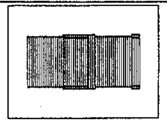
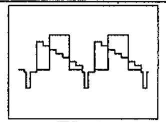
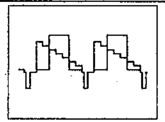
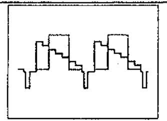
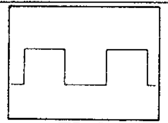
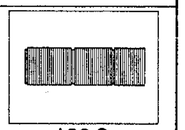
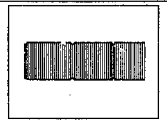
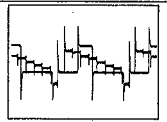
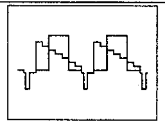
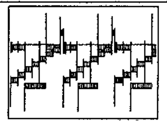
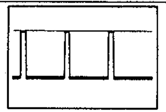
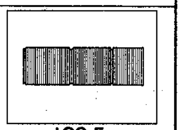

From 0 5 FMA PWB CN 18
CN 301
CH-1(L) MIX
GND
GND
CH-2(R) MIX
N C
R303 2.2K
R318 2.2K
0 3 VIDEO (COLOR)
From/To VIDEO (Y) CCT
REC 9V IN
PB FM IN
PB 5V IN
VIDEO IN
ROTARY CTL
9V IN
SYNC IN
SP 5V IN
REC COLOR
LP 9V IN
PB COLOR
COMP AUDIO
SYNC DET
W9
W1
W2
TP401 CONV BAL
L401 100μ
L407 470μ
C457 33P
R403 2.7K
Q405 47/10
C406 0.022
Q402
C402 0.047
L402 2.2m
C457 27p
L407 470μ
C449 0.022
R408 680
C401 0.01
R401 1K
L.P.F. 401
E.Q. 401
Q401
R406 1K
C450 0.022
R409 1K
R410 2.2K
Q403
C403 0.01
R404 47K
R402 1K
R405 150
R407 560
L404 820μ
C451 200P
C455 0.0056
C407 0.01
R413 1K
B.P.F. 401
C408 0.01
R414 1.2K
C409 0.033
R412 680
E.Q. 402
L.P.F. 402
R416 1K
R415 330
C452 0.22/50
C412 0.0033
R417 4.7K
C411 0.033
C410 390P
R418 4.7K
SP.PB COLOR
EP.PB COLOR
C423 0.01
C424 0.01
R444 680
Q401 Q402 2SC2021Q, RX2
Q403 DTC114F
D.L. 401
R445 820
C434 0.01
C413 0.0015
R420 3.9K
C458 0.0033
R419 27K
C414 0.022
C416 0.0033
C415 10/16
C418 0.047
C417 2.2/50
R422 330
R421 390 1/2W
C419 4.7/25
R424 5.6K
R423 1.2K
C420 27P CH
C422 82P
R470 470
X401 3.579545MHz
C421 22P CH
R425 470
MAIN CONV. BURST EMP. REC KILLER
ACC
ACC DET
H SYNC GATE
PB APC DET
REC APC DET
VXO
PB 1/8fH
PB DISCR
160fH VCO
KILLER DET
REC PHASE DET
1/160
1/4
PHASE SHIFT
BGP GEN
BURST DEEMP PB KILLER
PB MAIN CONV
REC/PB SW
SP/LP DET
SUB CONV
INV (1D)
C445 0.01
W3
W8
W7
W6
L405 100μ
C431 0.022
R432 22K
C430 47/10
C456 0.01
R434 3.3K
Q405
W10
Q406
D401
R433 22K
R431 4.7K
C432 0.001
R435 12K
C425 0.022
R436 12K
R438 5.6K
Q407
C433 0.01
R437 5.6K
R439 2.2K
TP404 PB COLOR
R440 100
R443 560K
R446 1.5K
BPF 402
R447 470
R441 6.8K
R442 1K
R448 1.8K
R449 4.7K
C436 0.01
D403
C438 2.2/50
C437 0.0047
R427 10K
R450 10K
R452 100
C439 220/10
C440 0.047
R454 10K
R453 5.6K
D402
R459 820
R455 270K
R456 22K
R466 5.6K
R467 2.2K
C443 4.7/25
C442 0.047
TP403 VXO
C444 0.022
R457 68K
R458 47K
CONV BAL
C435 0.01
AFC
VXO
R465 330
R471 1.5K
Q409
L406 68μ
C447 12P
R464 1K
C446 56P
TP412 AFC
W5
W4
PB COL LEVEL
L403 100μ
TP421 9V
Q405 2SC2021Q, R
Q406 2SC2021Q, R
Q407 2SC2021Q, R
IC 401 HA11741
Q409 2SB641S
Q408 2SC2021Q, R

**NOTES:** Unless otherwise specified.

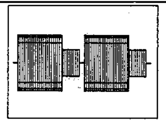
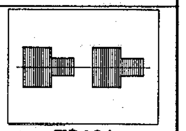
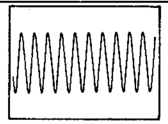
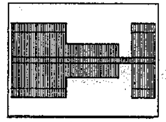
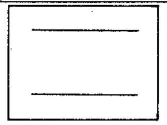
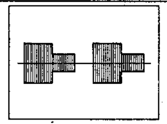
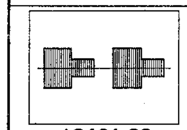
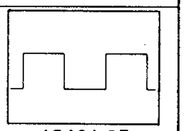
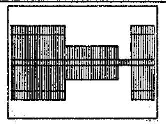
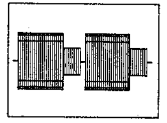
1. All resistance values are in ohms. (1/6 W, 1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. All diodes are 1SS133 (903 – 864).
5. Voltages are DC-measured with a digital voltmeter during recording (SP mode).
6. Where voltage differs between recording (SP mode) and playback (SP mode), the voltage during playback is shown in parentheses.
7. The digital transistor is a transistor that includes built in resistors. Both PNP and NPN transistors are available.
8. Waveforms are measured with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.

## Waveforms of video circuit

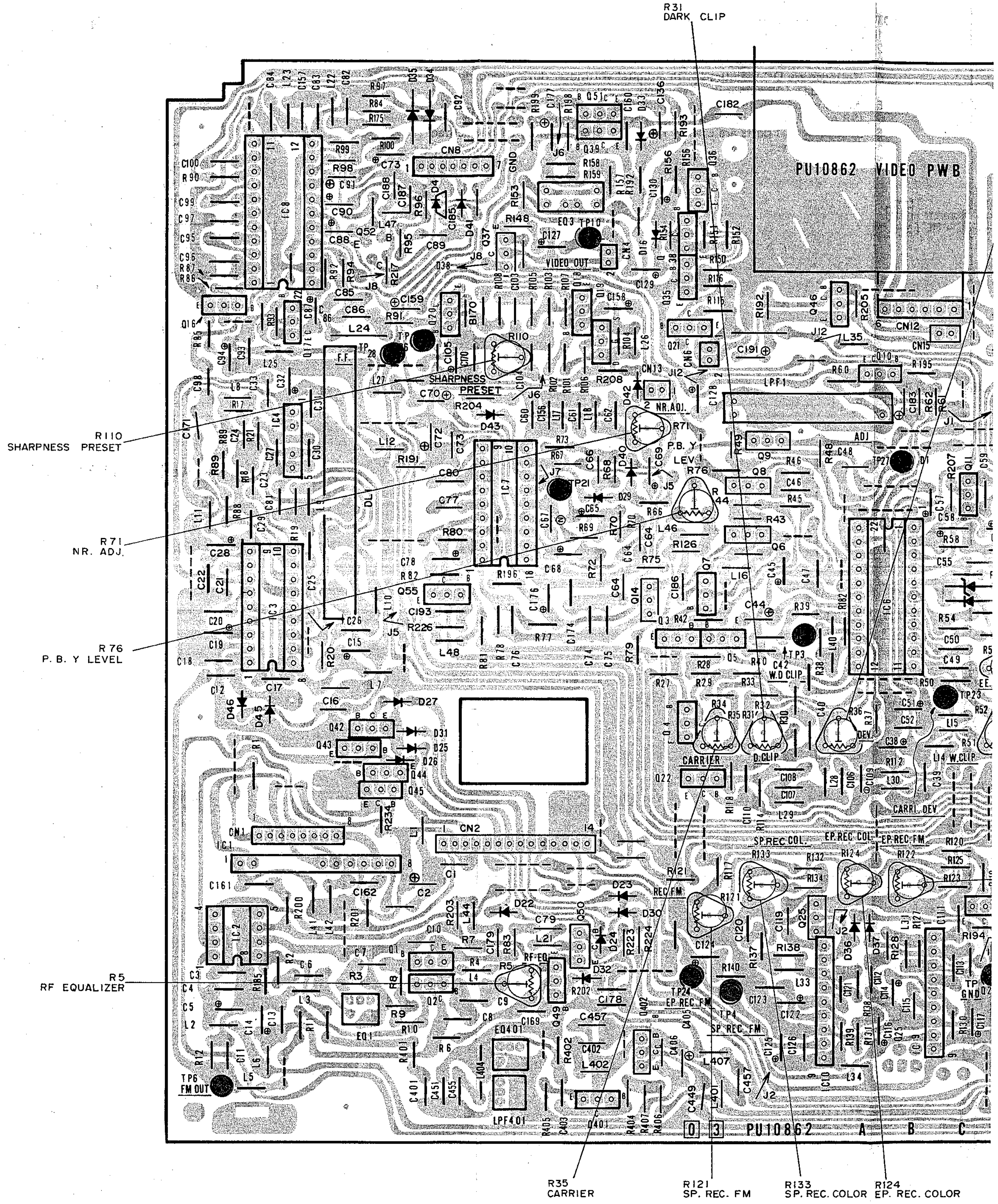
### — Luminance —

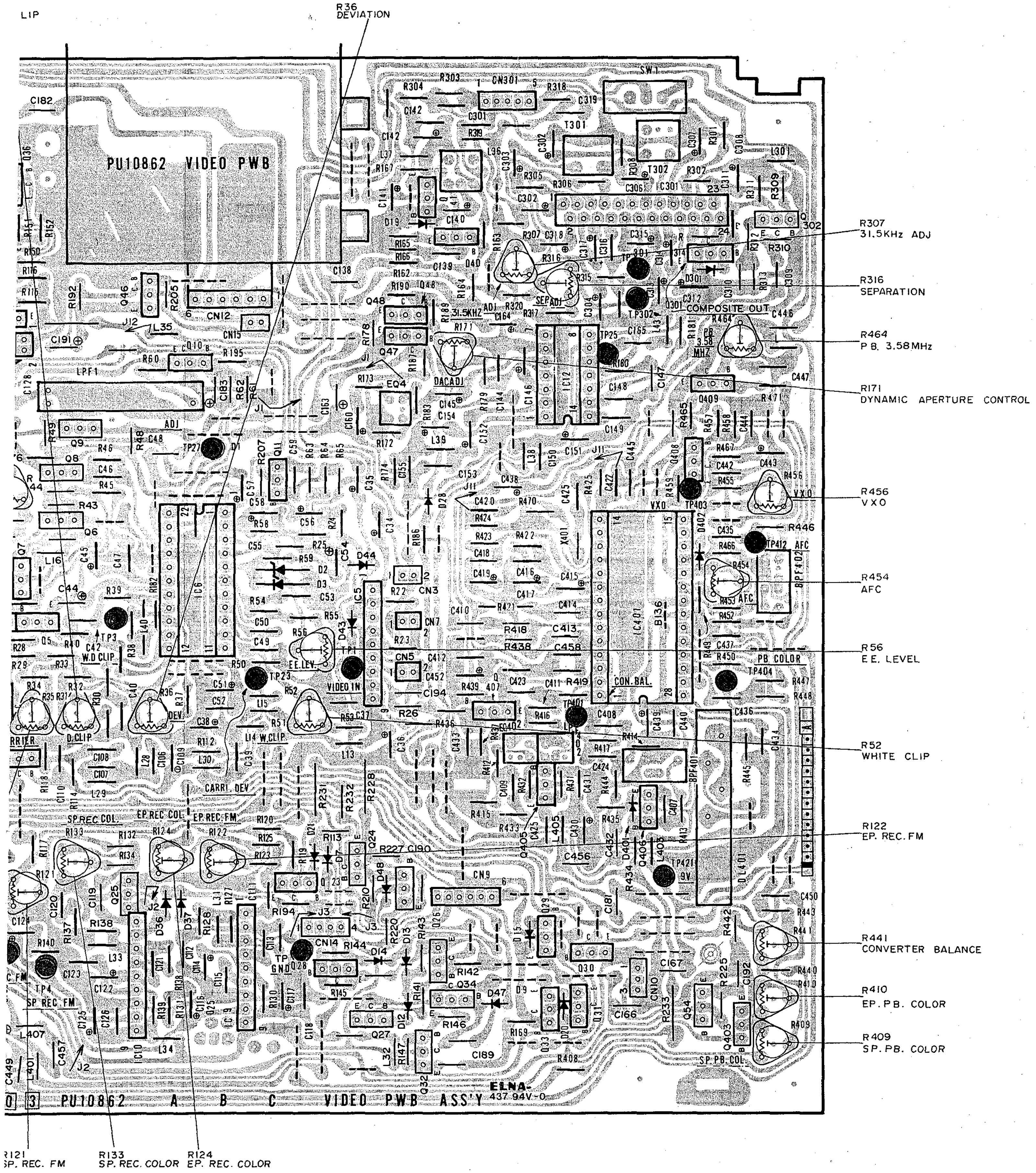
| W1 | W2 | W3 |
|---|---|---|
| <br>TP1<br>VIDEO IN<br>1.0 Vp-p<br>REC | <br>TP3<br>W/D CLIP<br>0.6 Vp-p<br>REC | <br>TP4<br>SP REC FM OUT<br>3.5 Vp-p<br>REC (SP) |
| **W4** | **W5** | **W6** |
| <br>TP6<br>PB FM OUT<br>0.25 Vp-p<br>PB | <br>TP10<br>VIDEO OUT<br>2.0 Vp-p | <br>TP23<br>CARRIER/DEV<br>0.8 Vp-p<br>REC |
| **W7** | **W8** | **W9** |
| <br>TP24<br>EP REC FM OUT<br>3.0 Vp-p<br>REC (EP) | <br>TP26<br>SHARPNESS<br>PRESET<br>1.1 Vp-p PB | <br>TP27<br>DYAC OUT<br>0.25 Vp-p<br>REC |
| **W10** | **W11** | **W12** |
| <br>TP27<br>DYAC OUT<br>0.45 Vp-p<br>PB | <br>TP28<br>FLIP FLOP<br>5.8 Vp-p | <br>IC2-8<br>0.25 Vp-p<br>PB |
| **W13** | **W14** | **W15** |
| <br>IC3-16<br>0.5 Vp-p<br>PB | <br>IC6-1<br>0.5 Vp-p<br>PB | <br>IC6-18<br>1.0 Vp-p<br>REC |
| **W16** | **W17** | **W18** |
| <br>IC7-18<br>0.25 Vp-p<br>PB | <br>IC8-1<br>3.5 Vp-p | <br>IC8-5<br>0.25 Vp-p<br>PB |

### — Color —

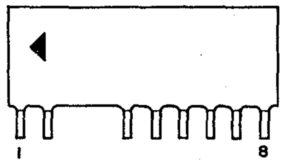
| W1 | W2 |
|---|---|
| <br>TP401<br>CONV BAL<br>0.22 Vp-p<br>REC | <br>TP401<br>CONV BAL<br>0.13 Vp-p<br>PB |
| **W3** | **W4** |
| <br>TP403<br>VXO<br>0.6 Vp-p<br>3.58 MHz | <br>TP404<br>PB COLOR<br>0.15 Vp-p<br>PB |
| **W5** | **W6** |
| <br>TP412<br>AFC<br>1.2 Vp-p | <br>IC401-20<br>0.6 Vp-p<br>PB |
| **W7** | **W8** |
| <br>IC401-22<br>0.5 Vp-p<br>PB | <br>IC401-25<br>4.5 Vp-p<br>30 Hz |
| **W9** | **W10** |
| <br>Q402-E<br>0.3 Vp-p<br>PB | <br>Q405-E<br>60 mVp-p<br>REC |

## 4.20 VIDEO CIRCUIT BOARD

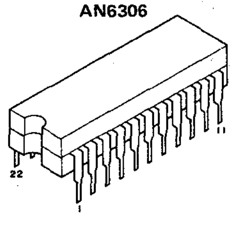

R31
DARK CLIP
R110
SHARPNESS PRESET
R71
NR. ADJ.
R76
P. B. Y LEVEL
R5
RF EQUALIZER
R35
CARRIER
R121
SP. REC. FM
R133
SP. REC. COLOR
R124
EP. REC. COLOR
PU10862 VIDEO PWB
PU10862


LIP
R36
DEVIATION
PU10862 VIDEO PWB
R307
31.5KHz ADJ
R316
SEPARATION
R464
P.B. 3.58MHz
R171
DYNAMIC APERTURE CONTROL
R456
VXO
R454
AFC
R56
E.E. LEVEL
R52
WHITE CLIP
R122
EP. REC. FM
R441
CONVERTER BALANCE
R410
EP. P.B. COLOR
R409
SP. P.B. COLOR
COMPOSITE OUT
PB 3.58 MHz
DAC ADJ
SEP ADJ
31.5KHz ADJ
VXO
AFC
PB COLOR
CON.BAL.
VIDEO IN
E.E.LEV.
W.D.CLIP
D.CLIP
CARRI.DEV
W.CLIP
SP.REC.COL.
EP.REC.COL.
EP.REC.FM
SP.REC.FM
SP.PB.COL.
PU10862 A B C VIDEO PWB ASS'Y
ELNA 437 94V-0
R121
SP. REC. FM
R133
SP. REC. COLOR
R124
EP. REC. COLOR

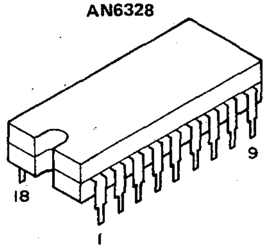
**12VT14**



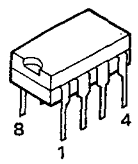
**AN6327**
**AN6306**



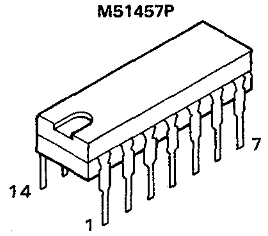
**AN6393**
**AN6328**



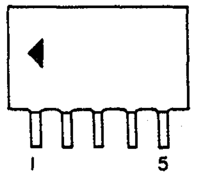
**AN6308**



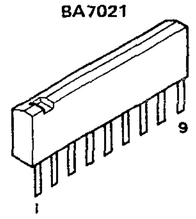
**M51457P**



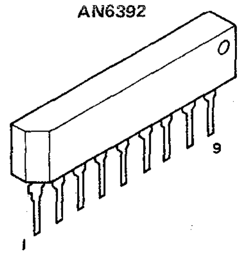
**5VT07**



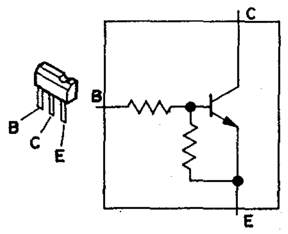
**BA7021**



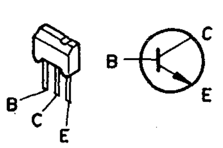
**AN6392**



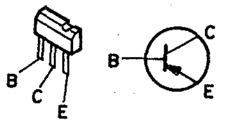
**DTC114F**
**DTC144WF**
**DTC124F**



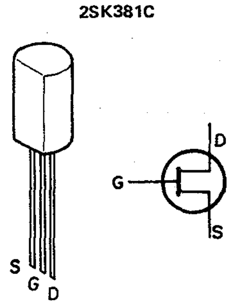
**2SC829**
**2SC2021**



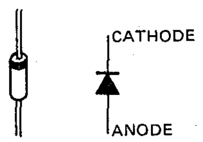
**2SB643**
**2SB641**



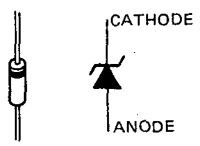
**2SK381C**



**1SS133**

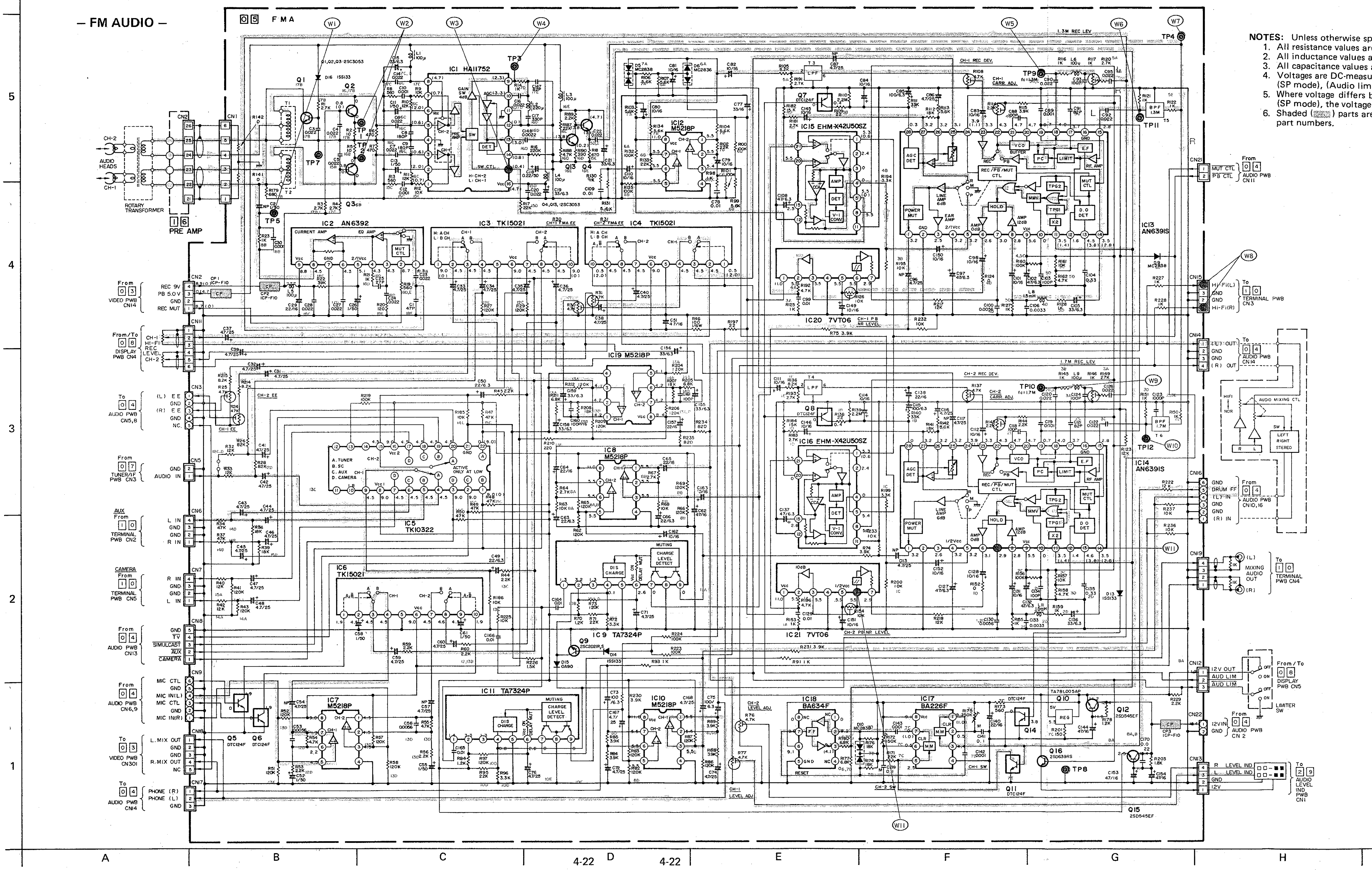

CATHODE
ANODE

**1SS99**


CATHODE
ANODE

## 4.21 FM AUDIO AND AUDIO INDICATOR SCHEMATIC DIAGRAMS

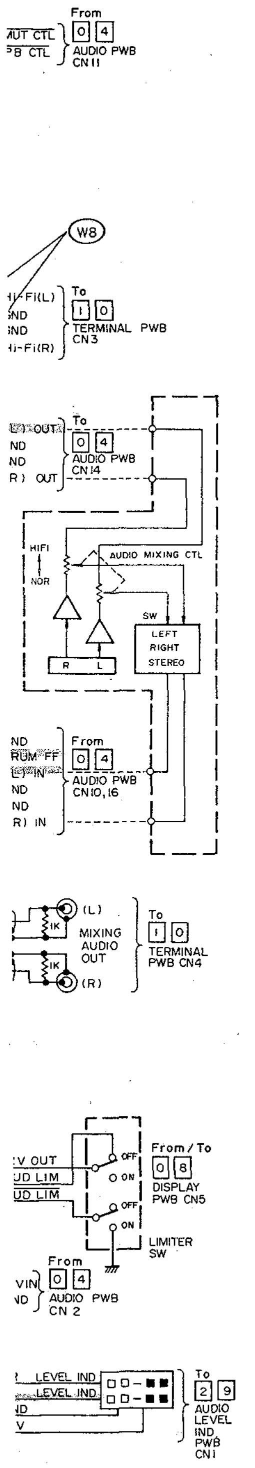
### – FM AUDIO –


0 5 FMA
1 6 PRE AMP
ROTARY TRANSFORMER
AUDIO HEADS
CH-2
CH-1
IC1 HA11752
IC2 AN6392
IC3 TK15021
IC4 TK15021
IC5 TK10322
IC6 TK15021
IC7 M5218P
IC8 M5218P
IC9 TA7324P
IC10 M5218P
IC11 TA7324P
IC12 M5218P
IC13 AN6391S
IC14 AN6391S
IC15 EHM-X42U50SZ
IC16 EHM-X42U50SZ
IC17 BA226F
IC18 BA634F
IC19 M5218P
IC20 7VT06
IC21 7VT06
TP1
TP2
TP3
TP4
TP5
TP7
TP8
TP9
TP10
TP11
TP12
W1
W2
W3
W4
W5
W6
W7
W8
W9
W10
W11
From 0 3 VIDEO PWB CN14
From/To 0 8 DISPLAY PWB CN4
To 0 4 AUDIO PWB CN5,8
From 0 7 TUNER/IF PWB CN3
AUX From 1 0 TERMINAL PWB CN2
CAMERA From 1 0 TERMINAL PWB CN5
From 0 4 AUDIO PWB CN13
From 0 4 AUDIO PWB CN6,9
To 0 3 VIDEO PWB CN301
To 0 4 AUDIO PWB CN14
From 0 4 AUDIO PWB CN11
To 1 0 TERMINAL PWB CN3
To 0 4 AUDIO PWB CN14
From 0 4 AUDIO PWB CN10,16
To 1 0 TERMINAL PWB CN4
From/To 0 8 DISPLAY PWB CN5
From 0 4 AUDIO PWB CN 2
To 2 9 AUDIO LEVEL IND PWB CN1
MIXING AUDIO OUT
LIMITER SW
AUDIO MIXING CTL
A
B
C
D
E
F
G
H
1
2
3
4
5
6

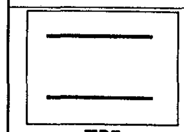
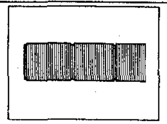
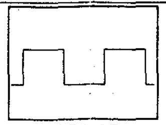
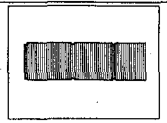
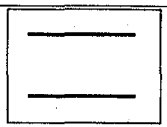
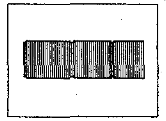
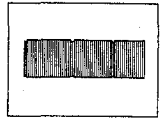
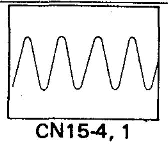
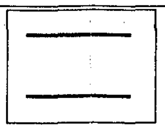
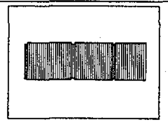
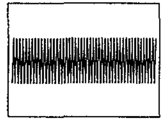
NOTES: Unless otherwise specifie
1. All resistance values are in o
2. All inductance values are in ,
3. All capacitance values are in
4. Voltages are DC-measured w
(SP mode), (Audio limiter S
5. Where voltage differs betwe
(SP mode), the voltage durir
6. Shaded (▨) parts are criti
part numbers.

**NOTES:** Unless otherwise specified.

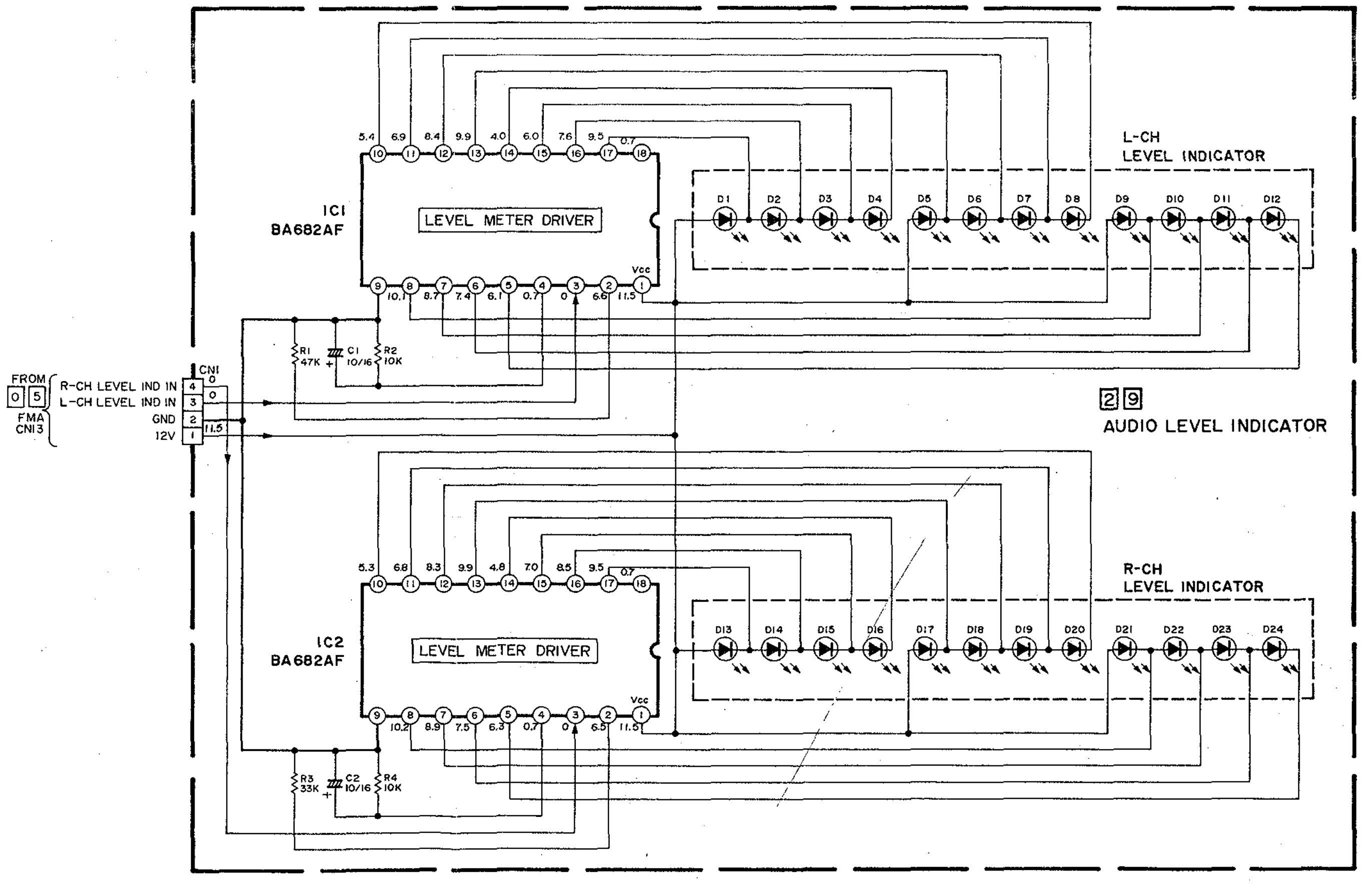
1. All resistance values are in ohms. (1/6 W, 1/8 W)
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. Voltages are DC-measured with a digital voltmeter during recording (SP mode), (Audio limiter SW : ON).
5. Where voltage differs between recording (SP mode) and playback (SP mode), the voltage during playback is shown in parentheses.
6. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.


From
AUT CTL
PB CTL
0 4
AUDIO PWB
CN11
W8
Hi-Fi(L)
GND
GND
Hi-Fi(R)
To
1 0
TERMINAL PWB
CN3
OUT
ND
ND
R) OUT
To
0 4
AUDIO PWB
CN14
HIFI
NOR
AUDIO MIXING CTL
SW
LEFT
RIGHT
STEREO
R
L
ND
RUM FF
L) IN
ND
ND
R) IN
From
0 4
AUDIO PWB
CN10, 16
(L)
1K
MIXING
AUDIO
OUT
1K
(R)
To
1 0
TERMINAL
PWB CN4
V OUT
UD LIM
UD LIM
OFF
ON
OFF
ON
From / To
0 8
DISPLAY
PWB CN5
LIMITER
SW
From
VIN
ND
0 4
AUDIO PWB
CN 2
LEVEL IND
LEVEL IND
ND
V
To
2 9
AUDIO
LEVEL
IND
PWB
CN1

## Waveforms of FM audio circuit

| W1 | W2 | W3 | W4 | W5 | W6 |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| TP5<br>7.5 Vp-p<br>REC | TP1, 2<br>20 mVp-p<br>PB | IC1-15<br>0.75 Vp-p, 30 Hz<br>PB | TP3<br>0.35 Vp-p<br>PB | TP9<br>0.4 Vp-p, 1.3 MHz<br>REC | TP11<br>0.13 Vp-p<br>PB |
| **W7** | **W8** | **W9** | **W10** | **W11** | |
|  |  |  |  |  | |
| TP4<br>0.7 Vp-p<br>PB | CN15-4, 1<br>2.2 Vp-p (REC)<br>1.4 Vp-p (PB)<br>1 kHz | TP10<br>0.4 Vp-p, 1.7 MHz<br>REC | TP12<br>0.14 Vp-p<br>PB | IC14-7, IC21-6<br>0.7 Vp-p<br>PB | |

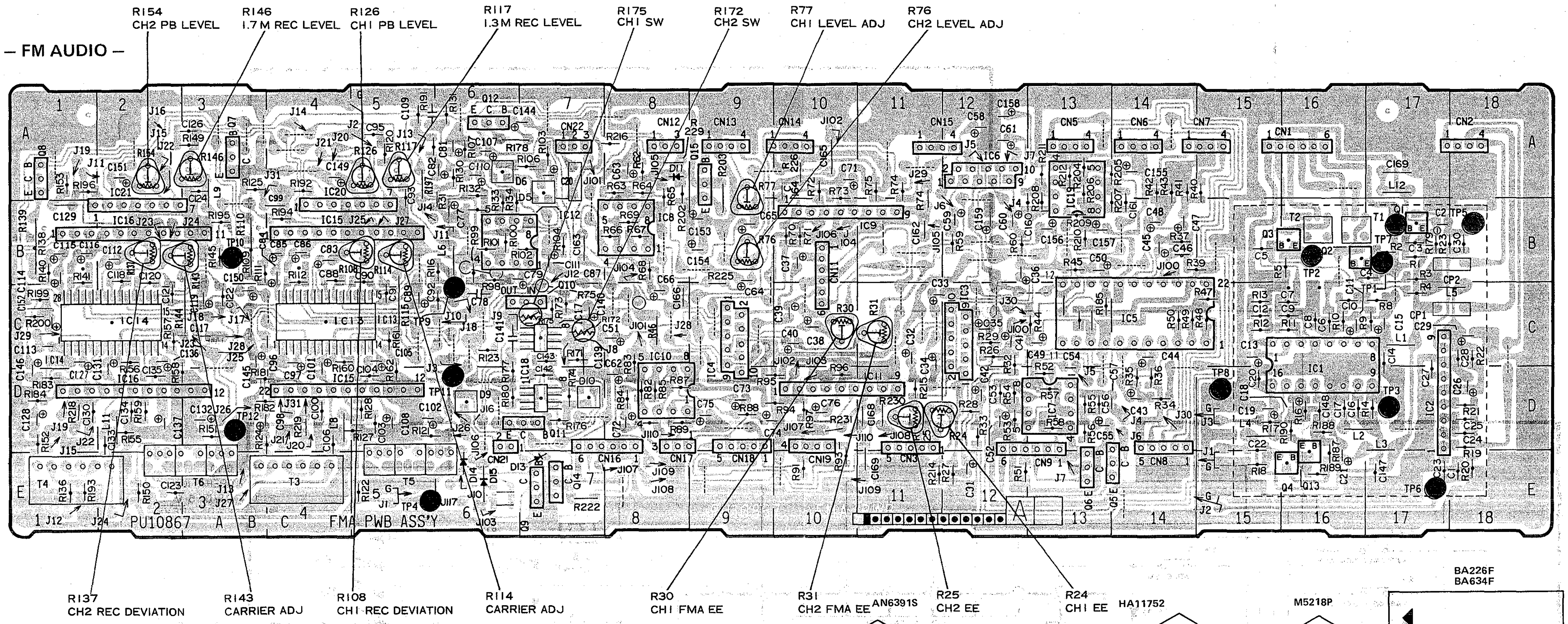
## – AUDIO INDICTOR –


IC1
BA682AF
LEVEL METER DRIVER
5.4
6.9
8.4
9.9
4.0
6.0
7.6
9.5
0.7
10
11
12
13
14
15
16
17
18
9
8
7
6
5
4
3
2
1
Vcc
10.1
8.7
7.4
6.1
0.7
0
6.6
11.5
R1
47K
C1
10/16
R2
10K
L-CH
LEVEL INDICATOR
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
FROM
0 5
FMA
CN13
R-CH LEVEL IND IN
L-CH LEVEL IND IN
GND
12V
CN1
4
3
2
1
0
0
11.5
2 9
AUDIO LEVEL INDICATOR
IC2
BA682AF
LEVEL METER DRIVER
5.3
6.8
8.3
9.9
4.8
7.0
8.5
9.5
0.7
10.2
8.9
7.5
6.3
0.7
0
6.5
11.5
R3
33K
C2
10/16
R4
10K
R-CH
LEVEL INDICATOR
D13
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24

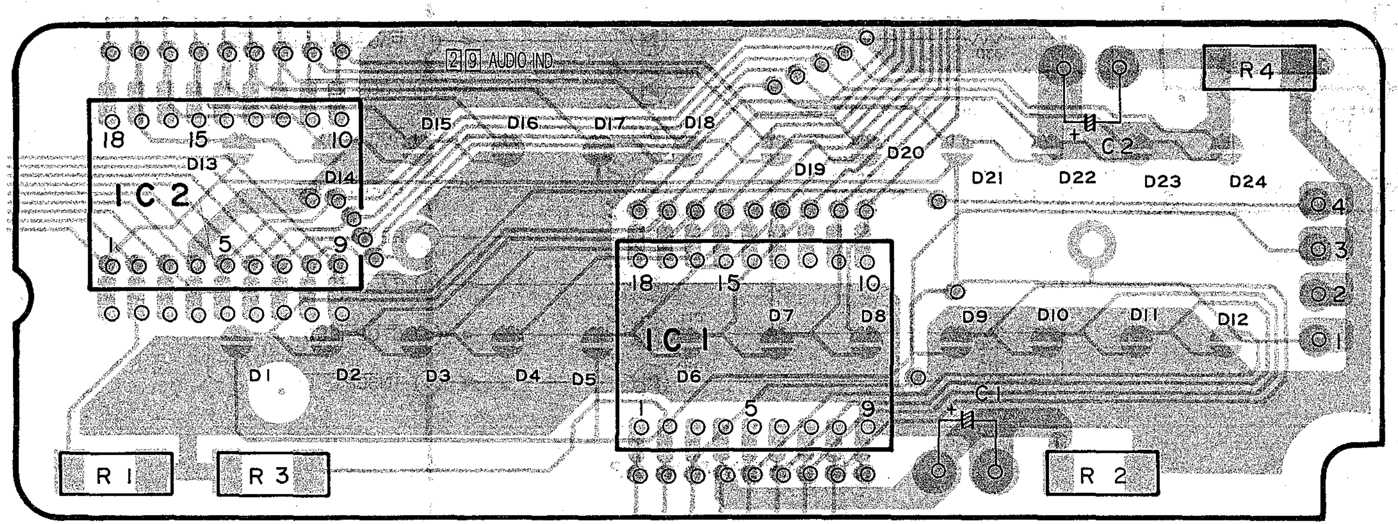
**NOTE:** Voltages are DC-measured with a digital voltmeter during stop mode.

## 4.22 FM AUDIO AND AUDIO INDICATOR CIRCUIT BOARDS

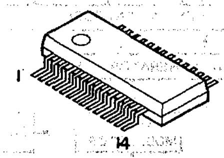
### – FM AUDIO –


R154
CH2 PB LEVEL
R146
1.7 M REC LEVEL
R126
CH1 PB LEVEL
R117
1.3 M REC LEVEL
R175
CH1 SW
R172
CH2 SW
R77
CH1 LEVEL ADJ
R76
CH2 LEVEL ADJ
PU10867
FMA PWB ASS'Y
R137
CH2 REC DEVIATION
R143
CARRIER ADJ
R108
CH1 REC DEVIATION
R114
CARRIER ADJ
R30
CH1 FMA EE
R31
CH2 FMA EE
R25
CH2 EE
R24
CH1 EE

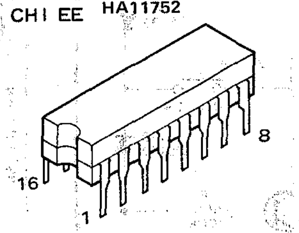
### – AUDIO INDICATOR –


AUDIO IND
IC 2
IC 1
R 1
R 2
R 3
R 4
C 1
C 2

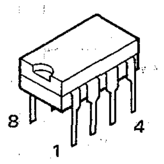
AN6391S



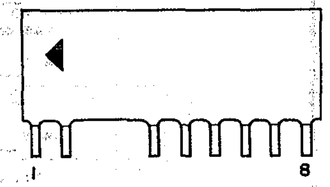
HA11752



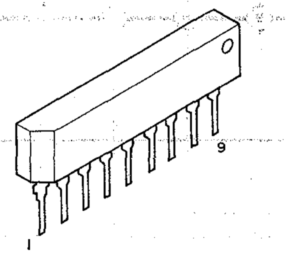
M5218P



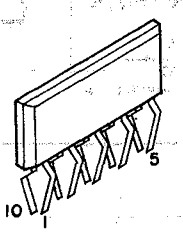
BA226F
BA634F



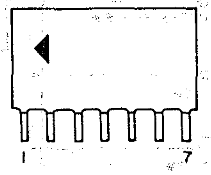
AN6392



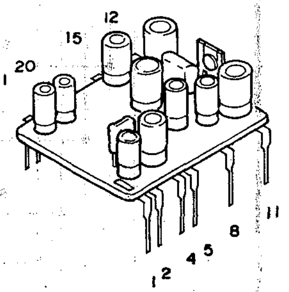
TK15021



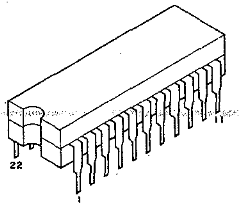
7VT06



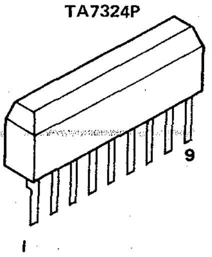
EHM-X42U50SZ


12
15
20
21
1
2
4
5
8
11

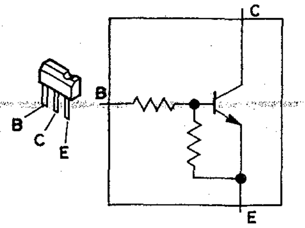
TK10322



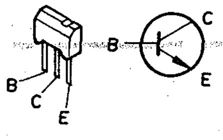
TA7324P



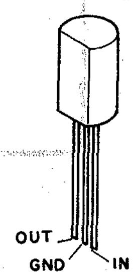
DTC124F



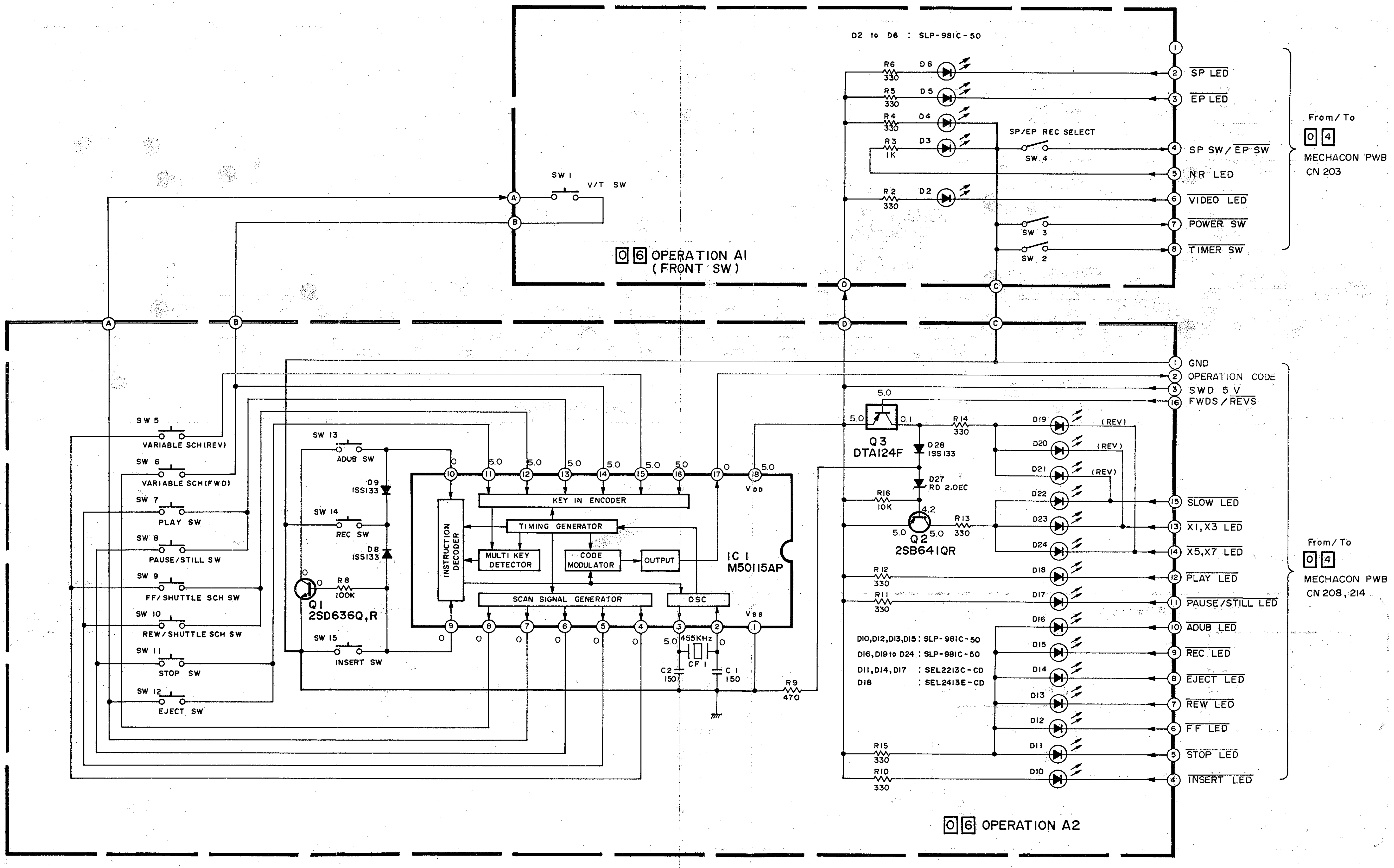
2SC2021
2SD545
2SC3053



TA78L005AP



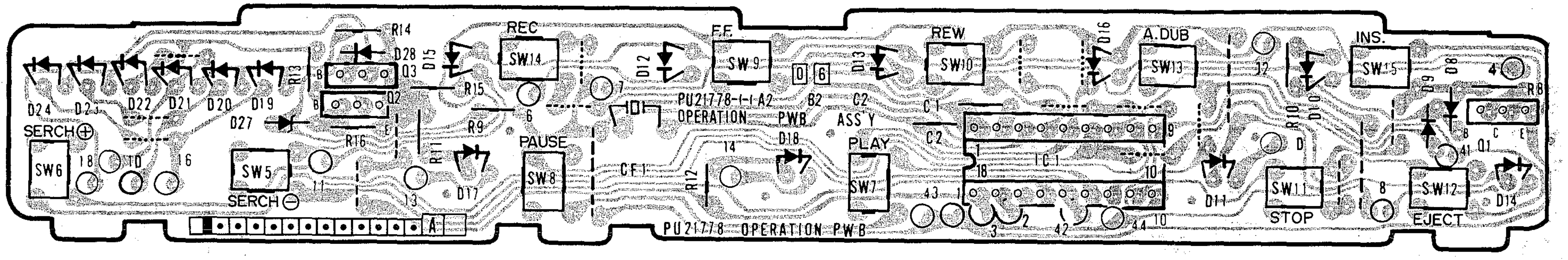
## 4.23 OPERATION SCHEMATIC DIAGRAM


D2 to D6 : SLP-981C-50
R6 330
D6
R5 330
D5
R4 330
D4
R3 1K
D3
R2 330
D2
SP/EP REC SELECT
SW 4
SW 3
SW 2
SW 1
V/T SW
SP LED
EP LED
SP SW/EP SW
NR LED
VIDEO LED
POWER SW
TIMER SW
From/To
04
MECHACON PWB
CN 203
06 OPERATION A1 (FRONT SW)
GND
OPERATION CODE
SWD 5 V
FWDS/REVS
SW 5
VARIABLE SCH (REV)
SW 6
VARIABLE SCH (FWD)
SW 7
PLAY SW
SW 8
PAUSE/STILL SW
SW 9
FF/SHUTTLE SCH SW
SW 10
REW/SHUTTLE SCH SW
SW 11
STOP SW
SW 12
EJECT SW
SW 13
ADUB SW
SW 14
REC SW
SW 15
INSERT SW
D9 1SS133
D8 1SS133
Q1
2SD636Q,R
R8 100K
INSTRUCTION DECODER
KEY IN ENCODER
TIMING GENERATOR
MULTI KEY DETECTOR
CODE MODULATOR
OUTPUT
SCAN SIGNAL GENERATOR
OSC
IC 1
M50115AP
VDD
Vss
455KHz
CF 1
C2 150
C1 150
R9 470
Q3
DTA124F
D28 1SS133
D27 RD 2.0EC
R14 330
R16 10K
Q2
2SB641QR
R13 330
R12 330
R11 330
R15 330
R10 330
D10,D12,D13,D15 : SLP-981C-50
D16,D19 to D24 : SLP-981C-50
D11,D14,D17 : SEL2213C-CD
D18 : SEL2413E-CD
D19 (REV)
D20 (REV)
D21 (REV)
D22
D23
D24
D18
D17
D16
D15
D14
D13
D12
D11
D10
SLOW LED
X1,X3 LED
X5,X7 LED
PLAY LED
PAUSE/STILL LED
ADUB LED
REC LED
EJECT LED
REW LED
FF LED
STOP LED
INSERT LED
From/To
04
MECHACON PWB
CN 208, 214
06 OPERATION A2

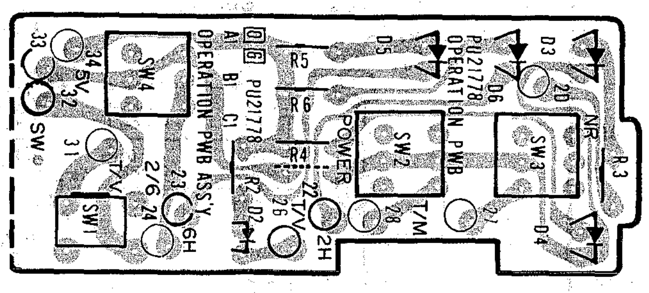
**NOTE:** Voltages are DC-measured with a digital voltmeter during stop mode.

## 4.24 OPERATION CIRCUIT BOARDS AND MODE SHIFT TABLE

### – OPERATION A2 –


R14
REC
F.F.
REW
A.DUB
INS.
D28
Q3
D15
SW14
D12
SW9
D6
D13
SW10
D16
SW13
J2
SW15
R8
D24
D23
D22
D21
D20
D19
D27
R13
Q2
R16
R15
R9
PAUSE
SW8
PU21778-1-1 A2
OPERATION PWB ASS'Y
D18
PLAY
SW7
C1
C2
IC1
SW11
STOP
SW12
EJECT
D14
Q1
D11
D17
R11
R12
CF1
SERCH⊕
SW6
SW5
SERCH⊖
PU21778 OPERATION PWB

### – OPERATION A1 –


SW4
SW1
SW2
SW3
R5
R6
R4
POWER
T/M
NR
D5
D3
D4
D6
PU21778
OPERATION PWB ASS'Y
PU21778 OPERATION PWB
SW

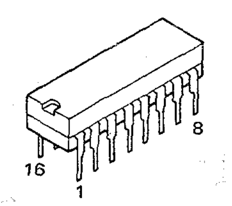
### – MODE SHIFT TABLE –

| KEY \ MODE | STOP | PLAY | STILL | SLOW / SEARCH | FF | REW | REC | REC + PAUSE | A. DUB + PLAY | A. DUB + PAUSE | INSERT PLAY | INSERT PAUSE | INSTANT REC | TIMER REC | EJECT UNLOAD | EJECT UNLOAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STOP |  | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | ○ | × |
| PLAY | ○ |  | ○ | ○ | ○ | ○ |  | ○ (REC PLAY) |  | ○ (A. DUB PLAY) |  | ○ (INS. PLAY) | × | × | ○ | × |
| PAUSE / STILL | × | ○ |  | ○ | × | × | ○ (REC PAUSE) |  | ○ (A. DUB PAUSE) |  | ○ (INS. PAUSE) |  | × | × | × | × |
| SLOW / SEARCH | × | ○ | ○ |  | × | × | × | × | × | × | × | × | × | × | × | × |
| FF | ○ | ○ (S. FF) | ○ (S. FF) | ○ (S. FF) |  | ○ | × | × | × | × | × | × | × | × | ○ | × |
| REW | ○ | ○ (S. REW) | ○ (S. REW) | ○ (S. REW) | ○ |  | × | × | × | × | × | × | × | × | ○ | × |
| REC + PLAY | ○ | ○ | ○ | ○ | ○ | ○ |  | ○ | ○ | ○ | ○ | ○ | × | × | ○ | × |
| REC + PAUSE | ○ | ○ | ○ | ○ | ○ | ○ | ○ |  | ○ | ○ | ○ | ○ | × | × | ○ | × |
| A. DUB + PLAY | ○ | ○ | ○ | ○ | ○ | ○ | × | × |  | ○ | × | × | × | × | ○ | × |
| A. DUB + PAUSE | ○ | ○ | ○ | ○ | ○ | ○ | × | × | ○ |  | × | × | × | × | ○ | × |
| EJECT | ○ | ○ | ○ | ○ | ○ | ○ | × | × | × | × | × | × | × | × |  |  |
| INSTANT REC | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × |  | × | ○ | × |
| CH. UP / DOWN | ○ | × | × | × | × | × | × | ○ | × | × | × | × | × | × | ○ | ○ |

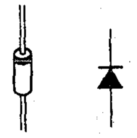
○ : Enabled (mode chandes)

× : Inhibited (mode does not change)

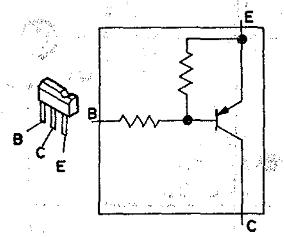
**M50115AP**



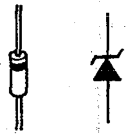
**1SS133**



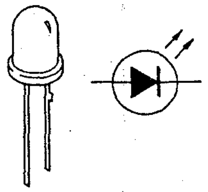
**DTA124F**



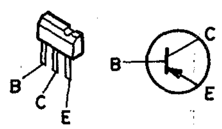
**RD2.0EC**



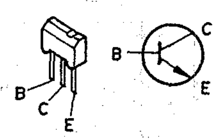
**SLP-981C-50**
**SEL2213C-CD**
**SEL2413E-CD**



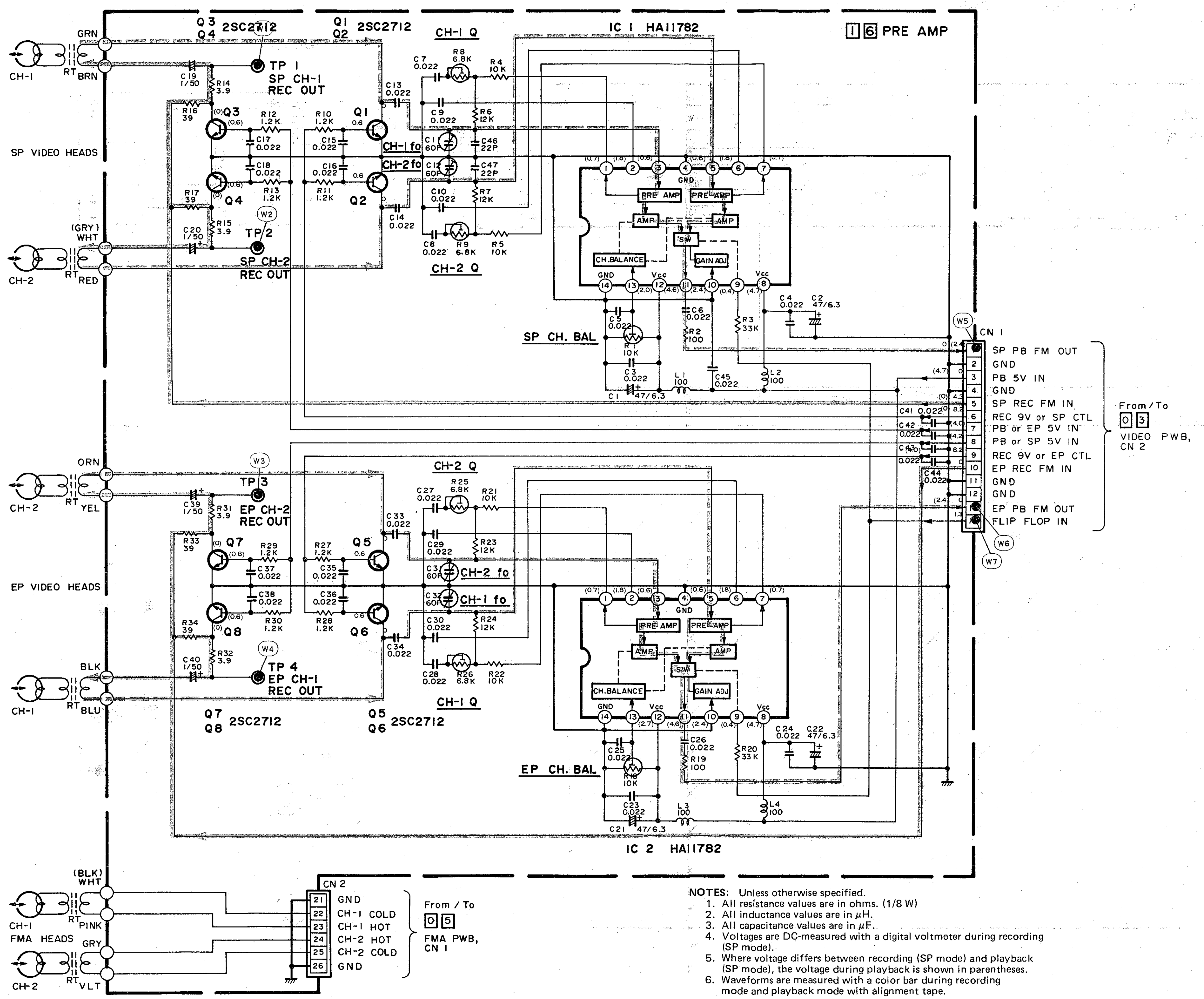
**2SB641**



**2SD636**

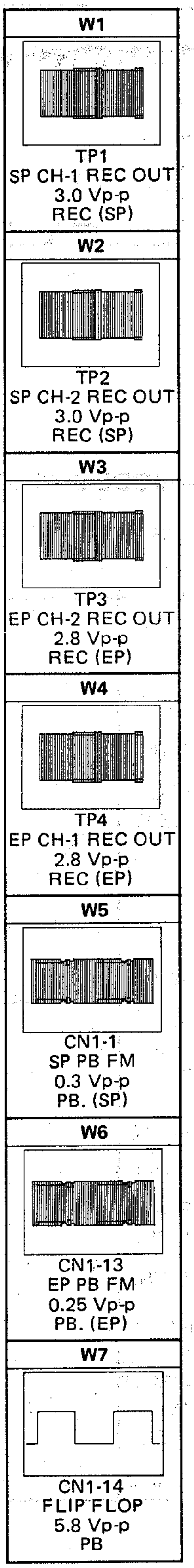


## 4.25 PREAMP SCHEMATIC DIAGRAM

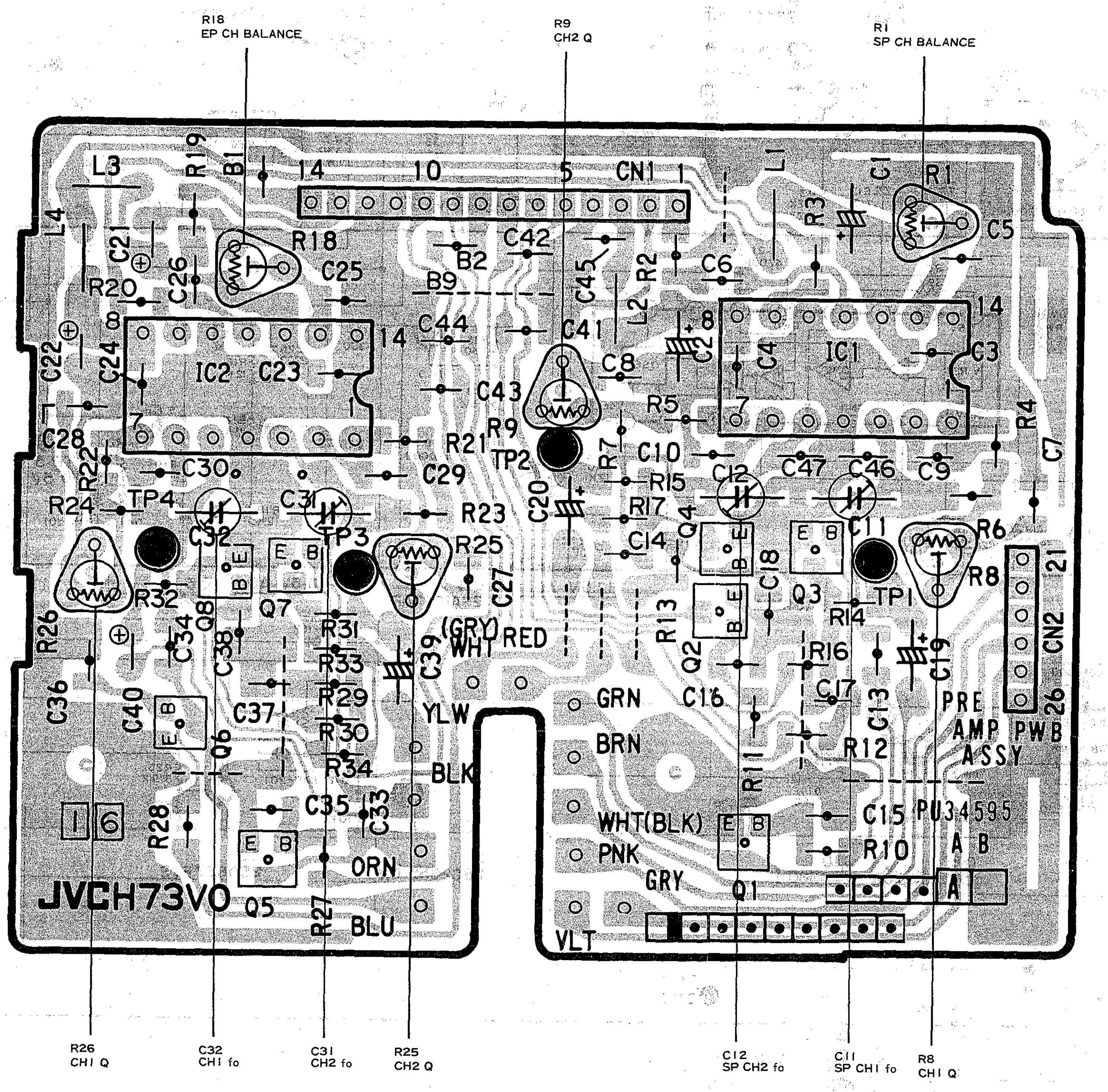

1 6 PRE AMP
Q3 Q4 2SC2712
Q1 Q2 2SC2712
CH-1 Q
CH-2 Q
IC 1 HA11782
IC 2 HA11782
SP VIDEO HEADS
EP VIDEO HEADS
CH-1 FMA HEADS
CH-2
GRN
BRN
WHT
RED
ORN
YEL
BLK
BLU
PINK
GRY
VLT
TP 1 SP CH-1 REC OUT
TP 2 SP CH-2 REC OUT
TP 3 EP CH-2 REC OUT
TP 4 EP CH-1 REC OUT
CH-1 fo
CH-2 fo
PRE AMP
AMP
SW
CH.BALANCE
GAIN ADJ
GND
Vcc
SP CH. BAL
EP CH. BAL
Q7 Q8 2SC2712
Q5 Q6 2SC2712
CN 1
SP PB FM OUT
GND
PB 5V IN
GND
SP REC FM IN
REC 9V or SP CTL
PB or EP 5V IN
PB or SP 5V IN
REC 9V or EP CTL
EP REC FM IN
GND
GND
EP PB FM OUT
FLIP FLOP IN
From/To 0 3 VIDEO PWB, CN 2
CN 2
21 GND
22 CH-1 COLD
23 CH-1 HOT
24 CH-2 HOT
25 CH-2 COLD
26 GND
From / To 0 5 FMA PWB, CN 1

NOTES: Unless otherwise specified.
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in µH.
3. All capacitance values are in µF.
4. Voltages are DC-measured with a digital voltmeter during recording (SP mode).
5. Where voltage differs between recording (SP mode) and playback (SP mode), the voltage during playback is shown in parentheses.
6. Waveforms are measured with a color bar during recording mode and playback mode with alignment tape.

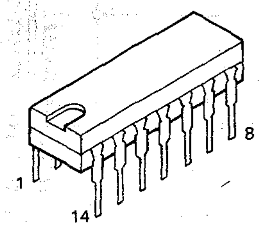
### Waveforms of preamp circuit



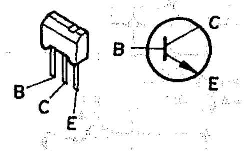
## 4.26 PREAMP CIRCUIT BOARD


R18
EP CH BALANCE
R9
CH2 Q
R1
SP CH BALANCE
L3
R19
B1
14
10
5
CN1
1
L1
R3
C1
R1
C5
L4
C21
R18
C25
B2
C42
C45
R2
C6
R20
C26
B9
L2
R20
C44
C41
C2
8
14
C22
C24
IC2
C23
C8
C4
IC1
C3
7
C43
R5
7
1
R4
C28
R21
R9
TP2
R7
C10
C7
R22
C30
C29
R15
C12
C47
C46
C9
R24
TP4
C31
R23
C20
R17
C11
R6
C32
TP3
R25
Q4
E
B
C14
R8
21
R26
R32
Q8
C34
C38
Q7
R31
C27
(GRY)
WHT
RED
R13
C18
Q3
TP1
R14
CN2
R33
C39
Q2
R16
C19
R29
C37
YLW
GRN
C16
C17
C13
PRE
AMP
PWB
ASSY
26
C36
C40
Q6
R30
BRN
R11
R12
R34
BLK
C35
C33
WHT(BLK)
C15
PU34595
A B
R28
ORN
PNK
R10
JVCH73VO
Q5
GRY
Q1
A
R27
BLU
VLT
R26
CH1 Q
C32
CH1 fo
C31
CH2 fo
R25
CH2 Q
C12
SP CH2 fo
C11
SP CH1 fo
R8
CH1 Q

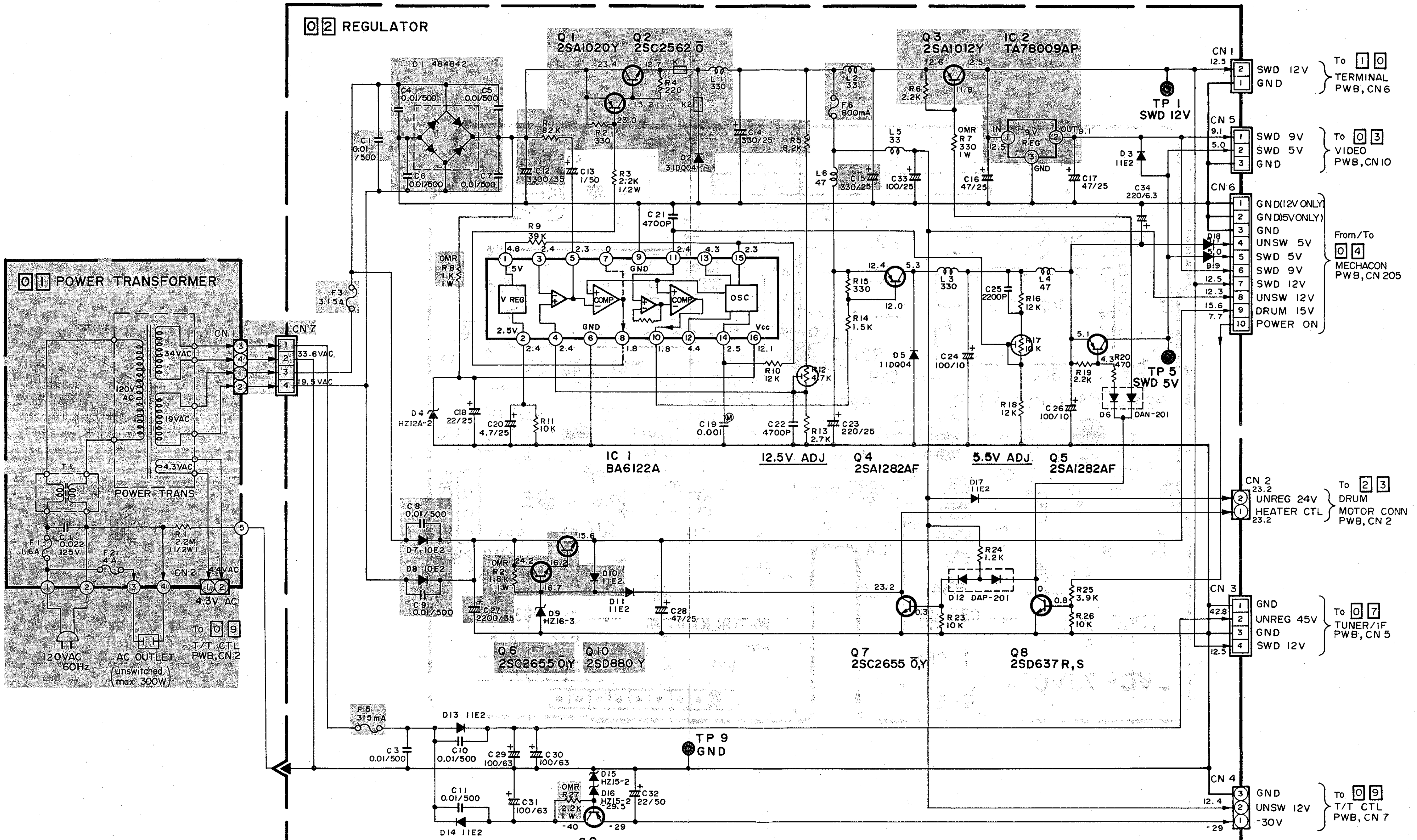
HA11782



2SC2712



## 4.27 REGULATOR SCHEMATIC DIAGRAM

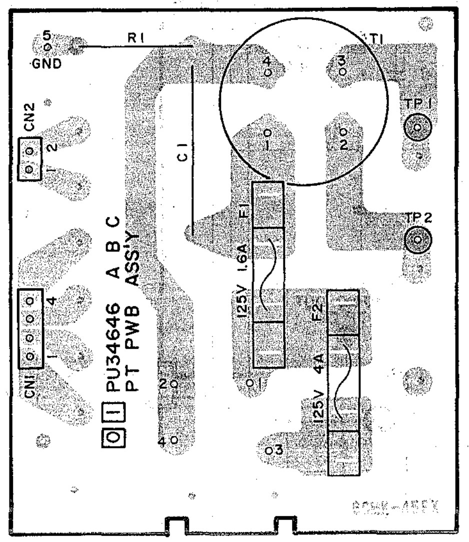

0 2 REGULATOR
0 1 POWER TRANSFORMER
POWER TRANS
T1
120V AC
34VAC
19VAC
4.3VAC
4.4VAC
4.3V AC
120VAC 60Hz
AC OUTLET (unswitched max 300W)
To 0 9 T/T CTL PWB, CN 2
F1 1.6A
F2 4A
C1 0.022 125V
R1 2.2M (1/2W)
CN 1
CN 2
CN 7
33.6VAC
19.5VAC
F3 3.15A
D1 4B4B42
C1 0.01 /500
C4 0.01/500
C5 0.01/500
C6 0.01/500
C7 0.01/500
Q1 2SA1020Y
Q2 2SC2562 O
R1 82K
R2 330
R3 2.2K 1/2W
R4 220
K1
K2
L1 330
D2 31DQ04
C12 3300/35
C13 1/50
C14 330/25
R5 8.2K
L2 33
F6 800mA
L6 47
C15 330/25
L5 33
C33 100/25
Q3 2SA1012Y
IC 2 TA78009AP
R6 2.2K
OMR R7 330 1W
9V REG
C16 47/25
C17 47/25
D3 11E2
C34 220/6.3
TP 1 SWD 12V
C21 4700P
R9 39K
OMR R8 1.K 1W
V REG
COMP
OSC
GND
Vcc
IC 1 BA6122A
D4 HZ12A-2
C18 22/25
C20 4.7/25
R11 10K
C19 0.001
R10 12K
R12 4.7K
C22 4700P
R13 2.7K
C23 220/25
12.5V ADJ
Q4 2SA1282AF
R15 330
R14 1.5K
D5 11DQ04
L3 330
L4 47
C25 2200P
R16 12K
R17 10K
C24 100/10
R18 12K
C26 100/10
R19 2.2K
R20 470
D6 DAN-201
TP 5 SWD 5V
5.5V ADJ
Q5 2SA1282AF
D18
CN 1
SWD 12V
GND
To 1 0 TERMINAL PWB, CN 6
CN 5
SWD 9V
SWD 5V
GND
To 0 3 VIDEO PWB, CN 10
CN 6
GND(12V ONLY)
GND(15V ONLY)
GND
UNSW 5V
SWD 5V
SWD 9V
SWD 12V
UNSW 12V
DRUM 15V
POWER ON
From/To 0 4 MECHACON PWB, CN 205
D17 11E2
CN 2
UNREG 24V
HEATER CTL
To 2 3 DRUM MOTOR CONN PWB, CN 2
C8 0.01/500
D7 10E2
D8 10E2
C9 0.01/500
OMR R21 1.8K 1W
D10 11E2
D11 11E2
C27 2200/35
D9 HZ16-3
C28 47/25
Q6 2SC2655 O,Y
Q10 2SD880 Y
R24 1.2K
D12 DAP-201
R23 10K
R25 3.9K
R26 10K
Q7 2SC2655 O,Y
Q8 2SD637R,S
CN 3
GND
UNREG 45V
GND
SWD 12V
To 0 7 TUNER/IF PWB, CN 5
F5 315mA
D13 11E2
C3 0.01/500
C10 0.01/500
C29 100/63
C30 100/63
TP 9 GND
C11 0.01/500
D14 11E2
C31 100/63
OMR R27 2.2K 1W
D15 HZ15-2
D16 HZ15-2
C32 22/50
Q9 2SB744Q
CN 4
GND
UNSW 12V
-30V
To 0 9 T/T CTL PWB, CN 7
A
B
C
E
F
G
H
1
2
3
4
5
6

NOTES: Unless otherwise specified.

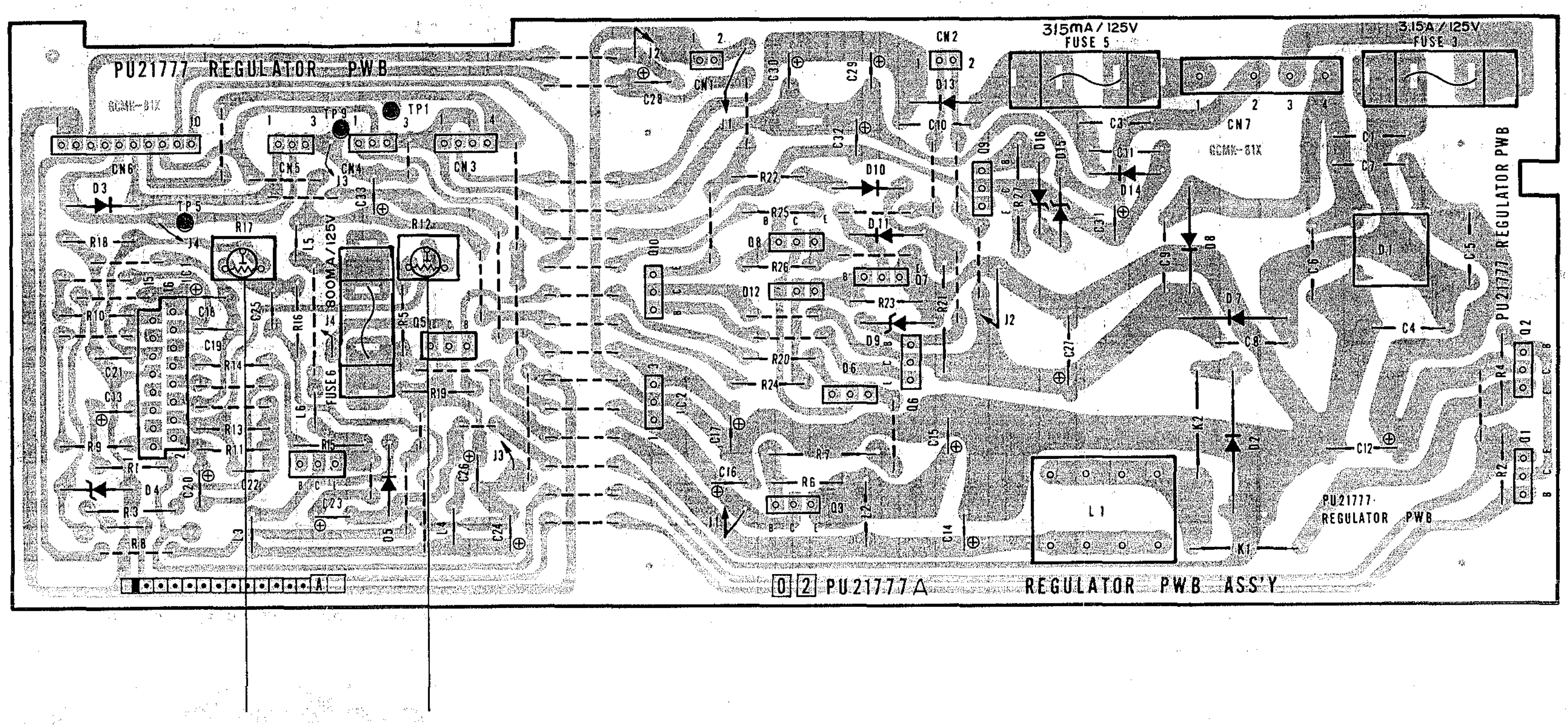
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. Voltages are DC-measured with a digital voltmeter during stop mode.
5. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

## 4.28 POWER TRANSFORMER AND REGULATOR CIRCUIT BOARDS

### – POWER TRANSFORMER –


5
GND
R1
T1
CN2
C1
TP1
TP2
F1
125V 1.6A
F2
125V 4A
CN1
PU34646 A B C
PT PWB ASS'Y
0 1

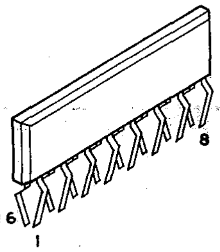
### – REGULATOR –


PU21777 REGULATOR PWB
315mA/125V
FUSE 5
3.15A/125V
FUSE 3
CN1
CN2
CN3
CN4
CN5
CN6
CN7
TP1
TP2
TP5
FUSE 6
800mA/125V
L1
PU21777 REGULATOR PWB
0 2 PU21777A REGULATOR PWB ASS'Y

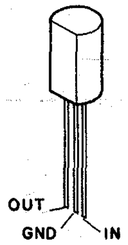
R17
5.5V ADJ

R12
12.5V ADJ

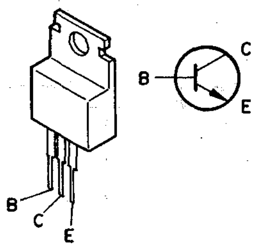
**BA6122A**



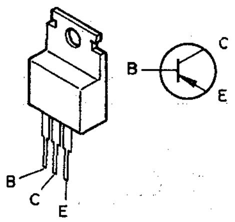
**TA78009AP**



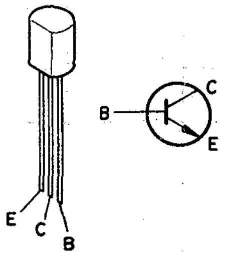
**2SC2562**
**2SD880**



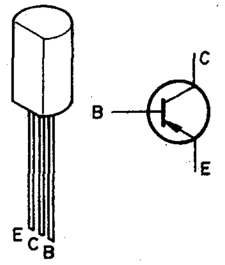
**2SA1012**



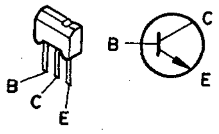
**2SC2655**



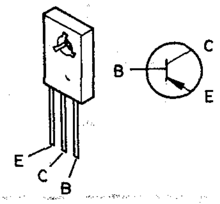
**2SA1282**



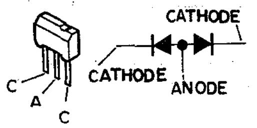
**2SD637**



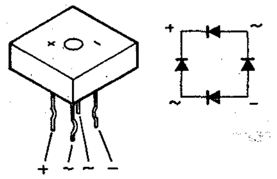
**2SB744Q**



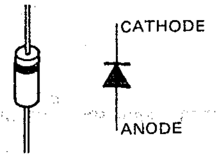
**DAP-201**


CATHODE
CATHODE
ANODE
C
A
C

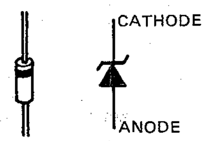
**4B4B42**



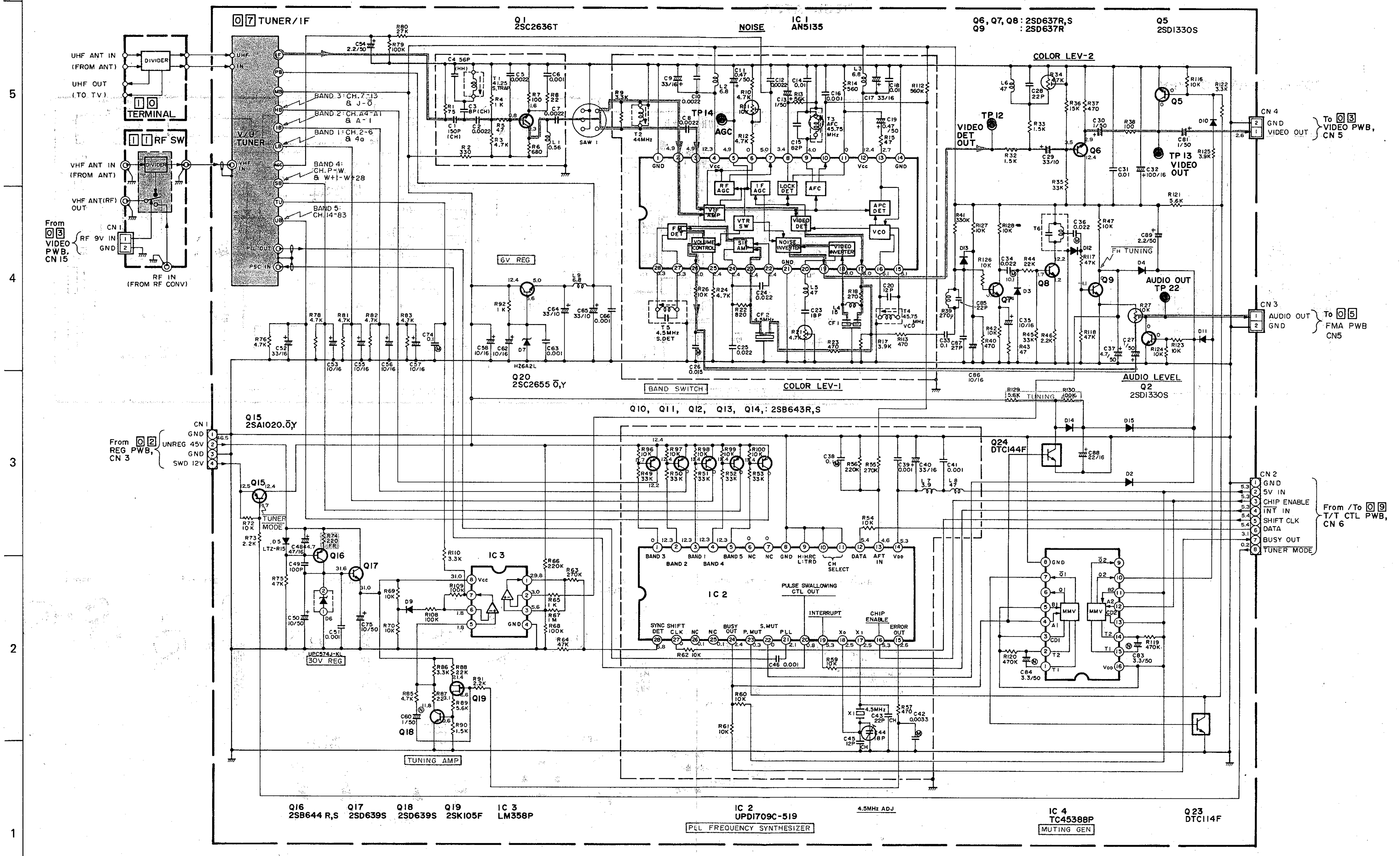
**31D004**
**11D004**
**11E2**
**10E2**


CATHODE
ANODE

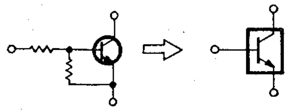
**HZ16-3**
**HZ15-2**


CATHODE
ANODE

## 4.29 TUNER/IF SCHEMATIC DIAGRAM

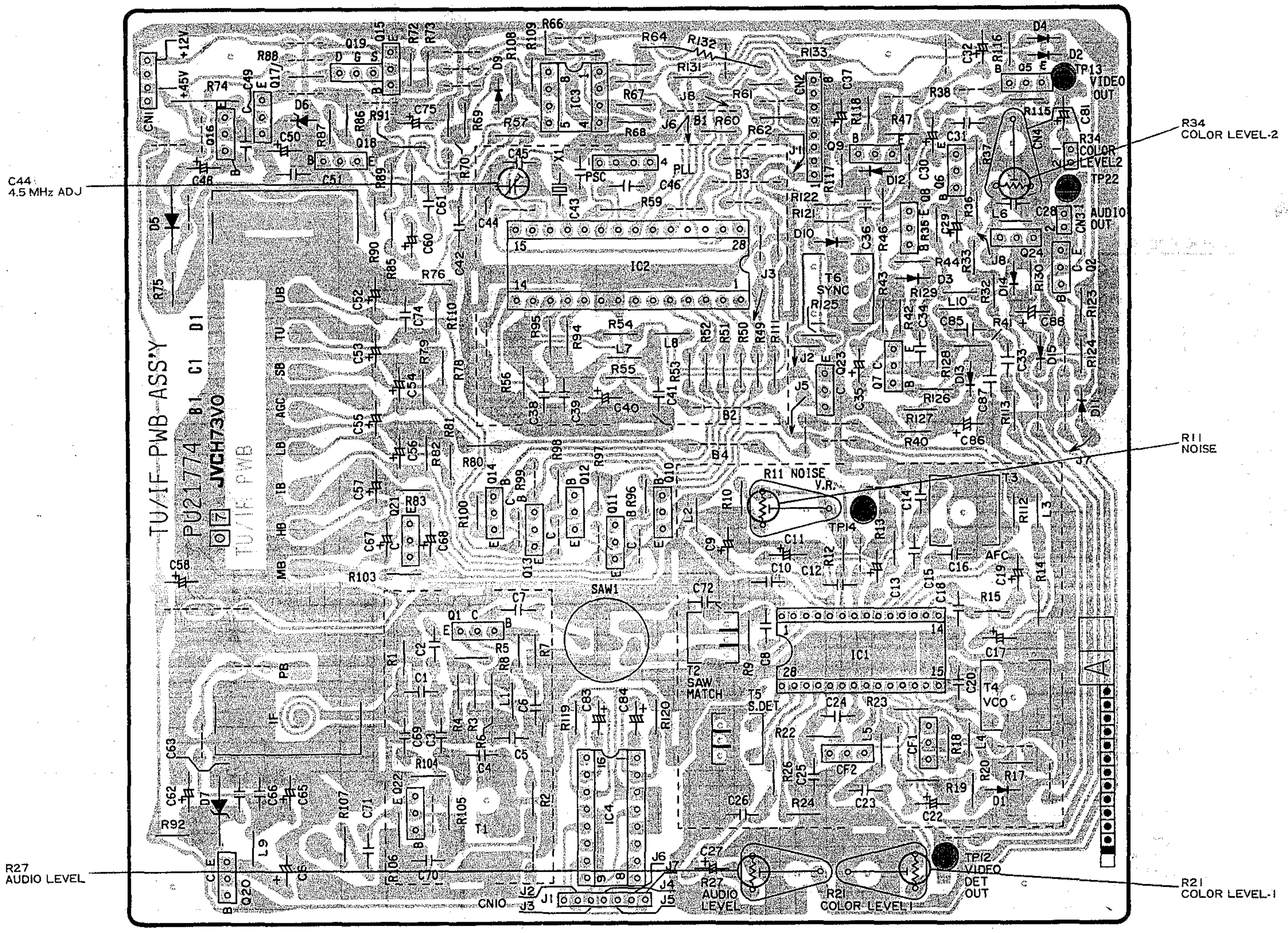

07 TUNER/IF
UHF ANT IN (FROM ANT)
UHF OUT (TO TV)
DIVIDER
10 TERMINAL
11 RF SW
VHF ANT IN (FROM ANT)
VHF ANT(RF) OUT
From 03 VIDEO PWB, CN 15
RF 9V IN
GND
RF IN (FROM RF CONV)
V/U TUNER
BAND 3: CH.7-13 & J-0
BAND 2: CH.A4-A1 & A-1
BAND 1: CH.2-6 & 4a
BAND 4: CH.P-W & W+1-W+28
BAND 5: CH.14-83
Q1 2SC2636T
NOISE
IC1 AN5135
Q6, Q7, Q8: 2SD637R,S
Q9: 2SD637R
Q5 2SD1330S
COLOR LEV-2
SAW 1
T2 44MHz
TP 14 AGC
TP 12 VIDEO DET OUT
TP 13 VIDEO OUT
CN 4
GND
VIDEO OUT
To 03 VIDEO PWB, CN 5
RF AGC
IF AGC
LOCK DET
AFC
APC DET
VCO
VIF AMP
VTR SW
VIDEO DET
FM DET
VOLUME CONTROL
SIF AMP
NOISE INVERTER
VIDEO INVERTER
T3 AFC 45.75MHz
T4 45.75MHz VCO
T5 4.5MHz S.DET
6V REG
Q20 2SC2655 O,Y
BAND SWITCH
COLOR LEV-1
FH TUNING
AUDIO OUT TP 22
CN 3
AUDIO OUT
To 05 FMA PWB CN5
AUDIO LEVEL
Q2 2SD1330S
TUNING
Q10, Q11, Q12, Q13, Q14: 2SB643R,S
CN 1
From 02 REG PWB, CN 3
UNREG 45V
SWD 12V
Q15 2SA1020 O,Y
Q24 DTC144F
CN 2
5V IN
CHIP ENABLE
INT IN
SHIFT CLK
DATA
BUSY OUT
TUNER MODE
From/To 09 T/T CTL PWB, CN 6
TUNER MODE
Q16
Q17
IC 3
UPC574J-K1 30V REG
IC 2
BAND 3
BAND 2
BAND 1
BAND 4
BAND 5
H:HRC L:TRD
CH SELECT
DATA
AFT IN
PULSE SWALLOWING CTL OUT
INTERRUPT
CHIP ENABLE
SYNC SHIFT DET CLK
BUSY OUT
P.MUT
S.MUT
PLL
ERROR OUT
MMV
Q18
Q19
TUNING AMP
X1 4.5MHz
Q16 2SB644 R,S
Q17 2SD639S
Q18 2SD639S
Q19 2SK105F
IC 3 LM358P
IC 2 UPD1709C-519
PLL FREQUENCY SYNTHESIZER
4.5MHz ADJ
IC 4 TC4538BP
MUTING GEN
Q23 DTC114F
6
5
4
3
2
1
A
B
C
E
F
G
H

**NOTES:** Unless otherwise specified.
1. All resistance values are in ohms. (1/6 W)
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. Voltages are DC-measured with a digital voltmeter during receiving a color broadcast.
5. The digital transistor is a transistor that includes built in resistors. Both PNP and NPN types are available.
6. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

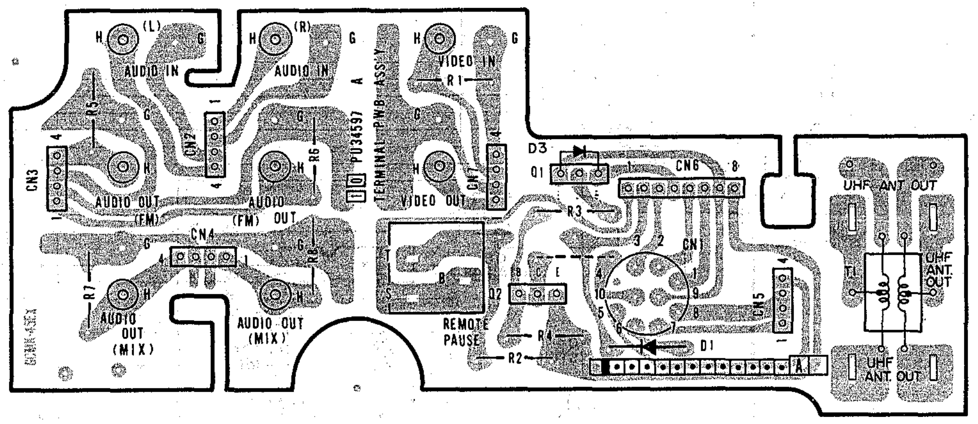


## 4.30 TUNER/IF AND TERMINAL CIRCUIT BOARDS

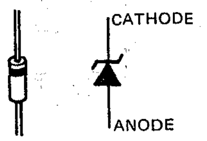
### – TUNER/IF –


C44
4.5 MHz ADJ
R34
COLOR LEVEL-2
R11
NOISE
R27
AUDIO LEVEL
R21
COLOR LEVEL-1
TU/IF PWB ASS'Y
PU21774
JVCH73V0
IC1
IC2
SAW1
TP12 VIDEO DET OUT
TP13 VIDEO OUT
TP14
TP22
R11 NOISE V.R.
R27 AUDIO LEVEL
R21 COLOR LEVEL-1
R34 COLOR LEVEL2
T2 SAW MATCH
T5 S.DET
T4 VCO
T6 SYNC
AFC
CN10
+12V
+45V

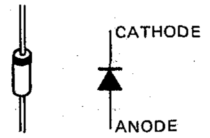
### – TERMINAL –


AUDIO IN (L)
AUDIO IN (R)
VIDEO IN
AUDIO OUT (FM)
AUDIO (FM) OUT
VIDEO OUT
AUDIO OUT (MIX)
AUDIO OUT (MIX)
REMOTE PAUSE
UHF ANT OUT
UHF ANT OUT
UHF ANT OUT
TERMINAL PWB ASS'Y
CN1
CN2
CN3
CN4
CN5
CN6
CN7
D1
D3
Q1

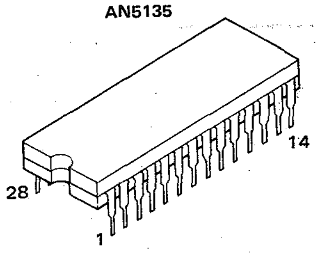
**HZ6A2L**


CATHODE
ANODE

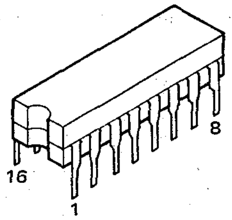
**1SS133**
**LTZ-R15**


CATHODE
ANODE

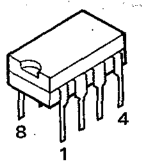
**UPD1709C-519**
**AN5135**



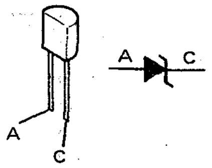
**TC4538BP**



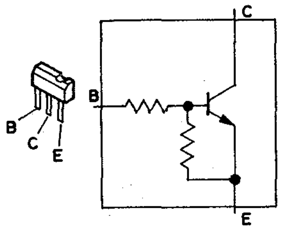
**LM358P**



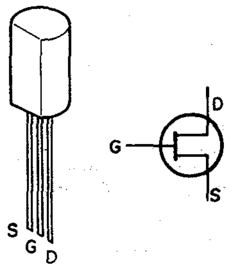
**UPC574J-KL**



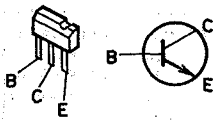
**DTC114F**



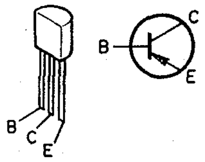
**2SK105F**



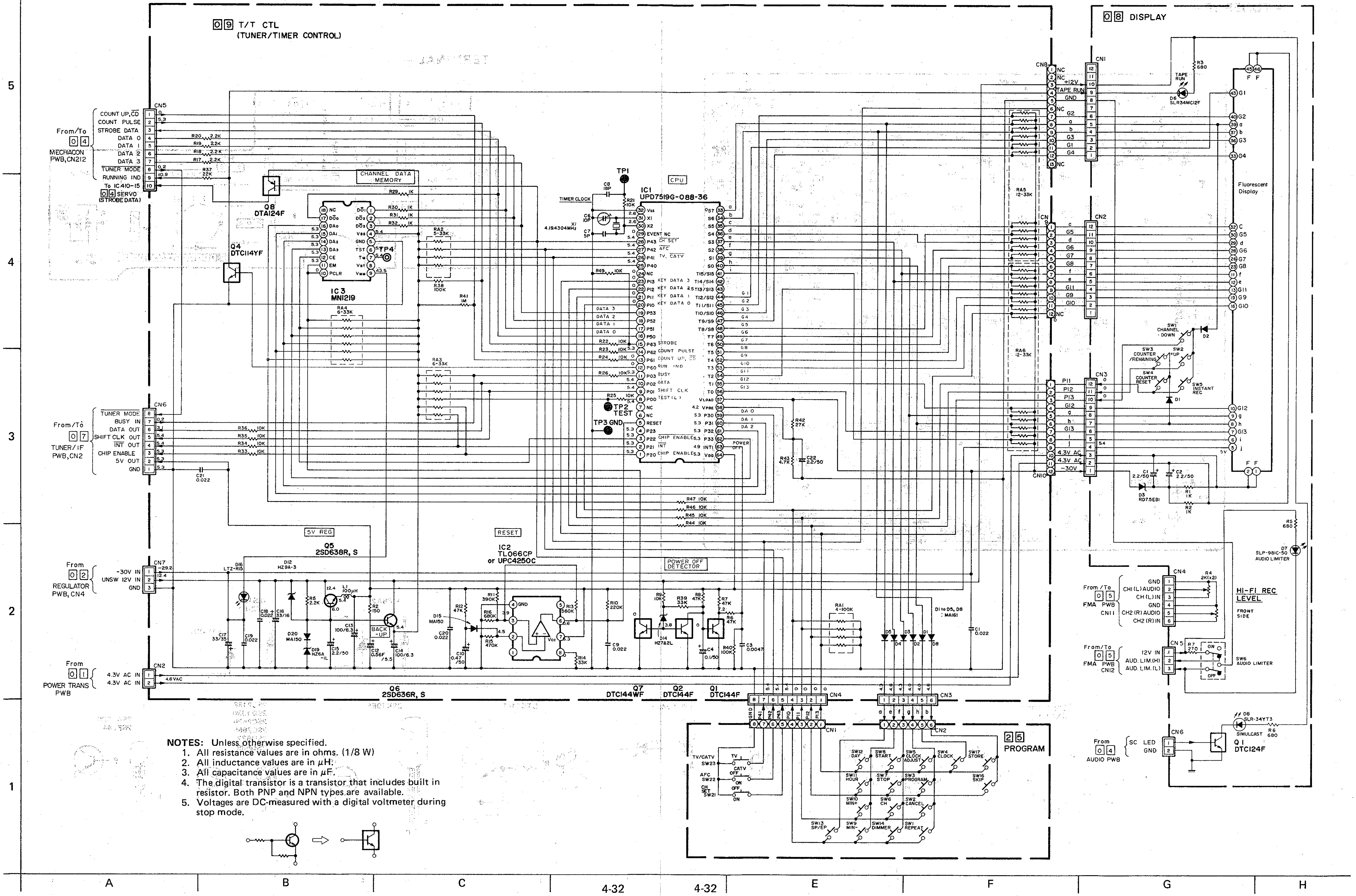
**2SC2188**
**2SD1330**
**2SC2636**
**2SC2665**
**2SD637**
**2SD639**



**2SA1020**
**2SB644**



## 4.31 TUNER/TIMER CONTROL, DISPLAY AND PROGRAM SCHEMATIC DIAGRAMS



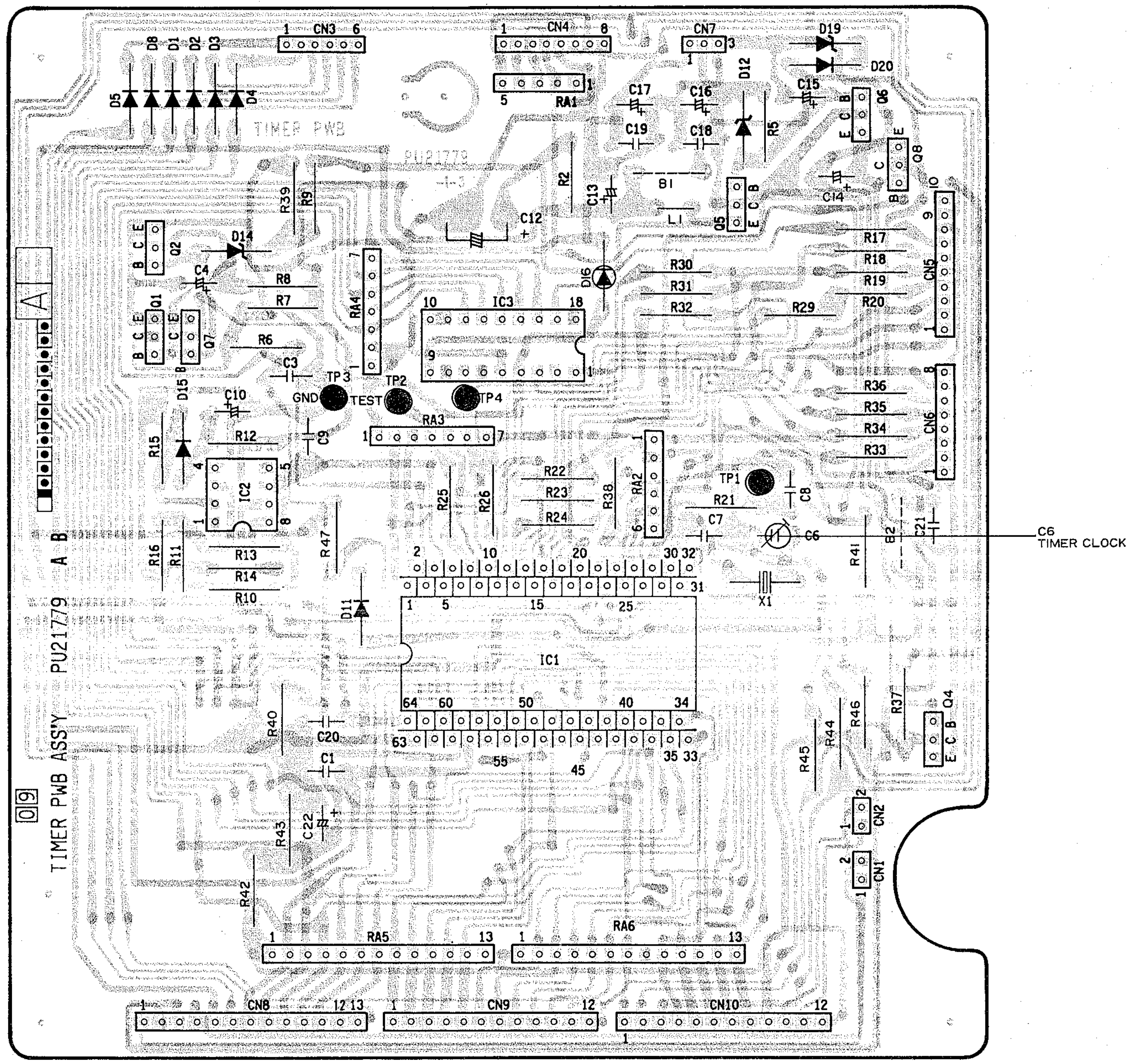
09 T/T CTL
(TUNER/TIMER CONTROL)
08 DISPLAY
25 PROGRAM
CN5
COUNT UP, CD
COUNT PULSE
STROBE DATA
DATA 0
DATA 1
DATA 2
DATA 3
TUNER MODE
RUNNING IND
From/To 04 MECHACON PWB, CN2I2
To IC410-15 04 SERVO (STROBE DATA)
CHANNEL DATA MEMORY
Q8 DTA124F
Q4 DTC114YF
IC3 MN1219
TP1
TP2 TEST
TP3 GND
TP4
CPU
IC1 UPD7519G-088-36
X1 4.194304MHz
TIMER CLOCK
RA2 5-33K
RA3 6-33K
RA4 6-33K
RA5 12-33K
RA6 12-33K
CN6
TUNER MODE
BUSY IN
DATA OUT
SHIFT CLK OUT
INT OUT
CHIP ENABLE
5V OUT
GND
From/To 07 TUNER/IF PWB, CN2
CN7
-30V IN
UNSW 12V IN
GND
From 02 REGULATOR PWB, CN4
CN2
4.3V AC IN
4.3V AC IN
From 01 POWER TRANS PWB
5V REG
Q5 2SD638R, S
Q6 2SD636R, S
RESET
IC2 TL066CP or UPC4250C
POWER OFF DETECTOR
Q7 DTC144WF
Q2 DTC144F
Q1 DTC144F
D1 to D5, D8 : MA161
CN8
CN1
CN2
CN3
CN4
CN10
NC
+12V
TAPE RUN
GND
D6 SLR34MC12F
Fluorescent Display
SW1 CHANNEL - DOWN
SW2 UP
SW3 COUNTER /REMAINING
SW4 COUNTER RESET
SW5 INSTANT REC
D3 RD7.5EB1
D7 SLP-981C-50 AUDIO LIMITER
CN4
GND
CH1 (L) AUDIO
CH1 (L) IN
GND
CH2 (R) AUDIO
CH2 (R) IN
From/To 05 FMA PWB CN11
R4 2K(×2)
HI-FI REC LEVEL
FRONT SIDE
CN5
12V IN
AUD. LIM.(H)
AUD. LIM.(L)
From/To 05 FMA PWB CN12
SW6 AUDIO LIMITER
ON
OFF
D8 SLR-34YT3
SIMULCAST
CN6
SC LED
GND
From 04 AUDIO PWB
Q1 DTC124F
TV/CATV SW23
AFC SW22
CH SET SW21
TV
CATV
OFF
ON
SW12 DAY
SW8 START
SW5 CLOCK ADJUST
SW4 CLOCK
SW17 STORE
SW11 HOUR
SW7 STOP
SW3 PROGRAM
SW16 SKIP
SW10 MIN+
SW6 CH
SW2 CANCEL
SW13 SP/EP
SW9 MIN-
SW14 DIMMER
SW1 REPEAT
A
B
C
E
F
G
H
1
2
3
4
5
6

**NOTES:** Unless otherwise specified.

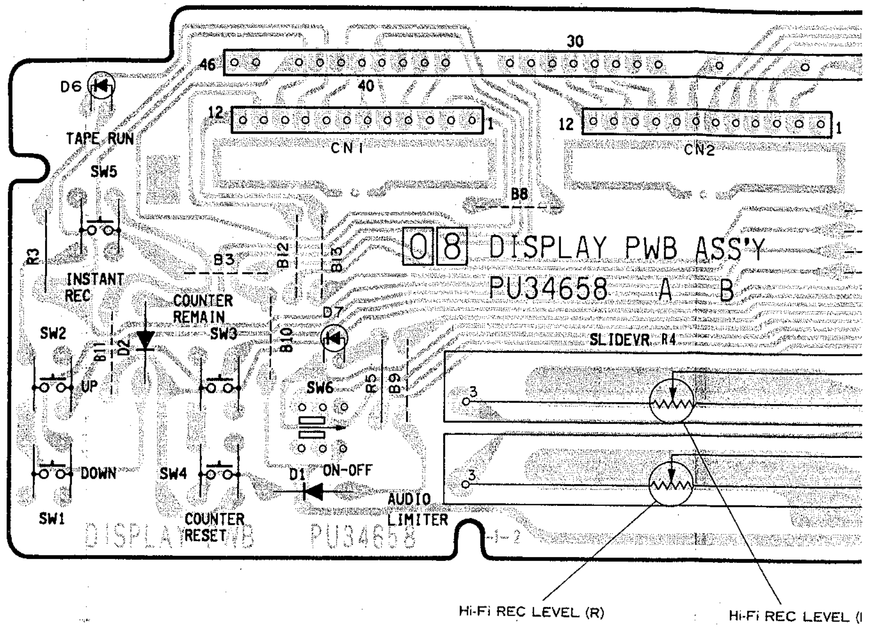
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. The digital transistor is a transistor that includes built in resistor. Both PNP and NPN types are available.
5. Voltages are DC-measured with a digital voltmeter during stop mode.

## 4.32 TUNER/TIMER CONTROL, DISPLAY AND PROGRAM CIRCUIT BOARDS

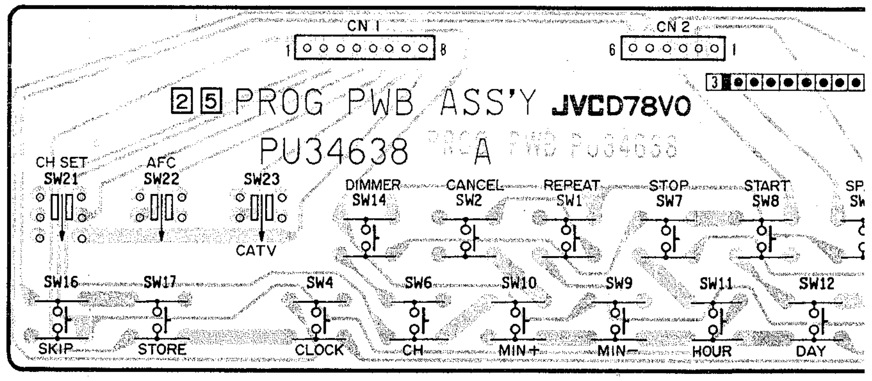
### – TUNER/TIMER CTL –


09 TIMER PWB ASS'Y PU21779 A B
TIMER PWB
PU21779
CN3
CN4
CN7
RA1
D19
D20
D12
IC3
IC2
IC1
TP1
TP2 TEST
TP3 GND
TP4
X1
RA2
RA3
RA4
RA5
RA6
CN1
CN2
CN5
CN6
CN8
CN9
CN10
C6
TIMER CLOCK

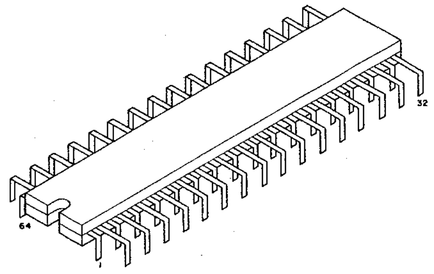
### – DISPLAY –


08 DISPLAY PWB ASS'Y
PU34658 A B
CN1
CN2
D6
TAPE RUN
SW5
INSTANT REC
COUNTER REMAIN
SW2
UP
SW3
SW6
D7
SLIDEVR R4
DOWN
SW4
D1 ON-OFF
SW1
COUNTER RESET
AUDIO LIMITER
Hi-Fi REC LEVEL (R)
Hi-Fi REC LEVEL (L)

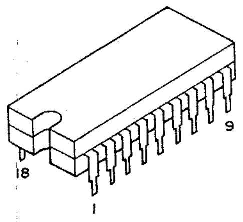
### – PROGRAM –


25 PROG PWB ASS'Y JVCD78V0
PU34638 A
CN1
CN2
CH SET SW21
AFC SW22
SW23
CATV
DIMMER SW14
CANCEL SW2
REPEAT SW1
STOP SW7
START SW8
SW16 SKIP
SW17 STORE
SW4 CLOCK
SW6 CH
SW10 MIN+
SW9 MIN–
SW11 HOUR
SW12 DAY

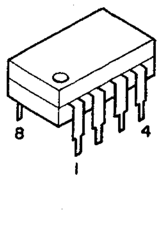
UPD7519G-088-36



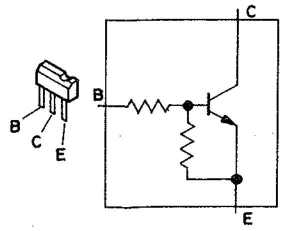
MN1219

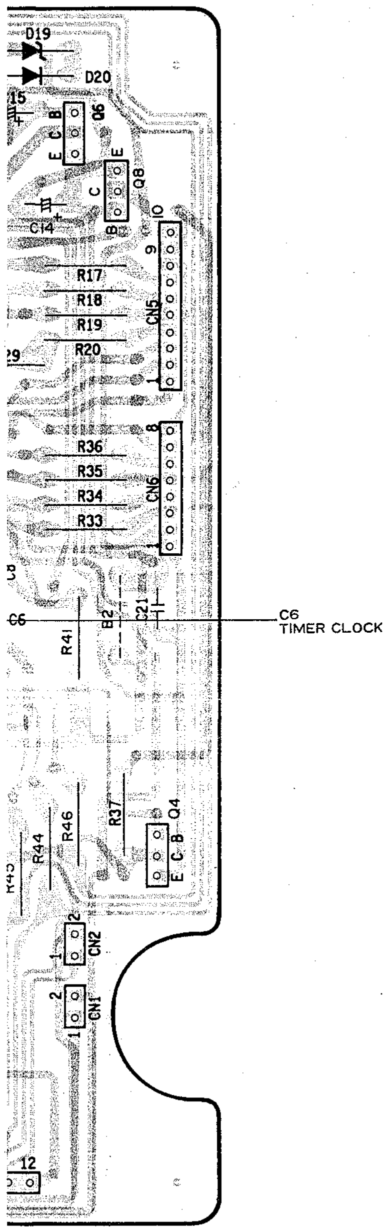


TL066CP

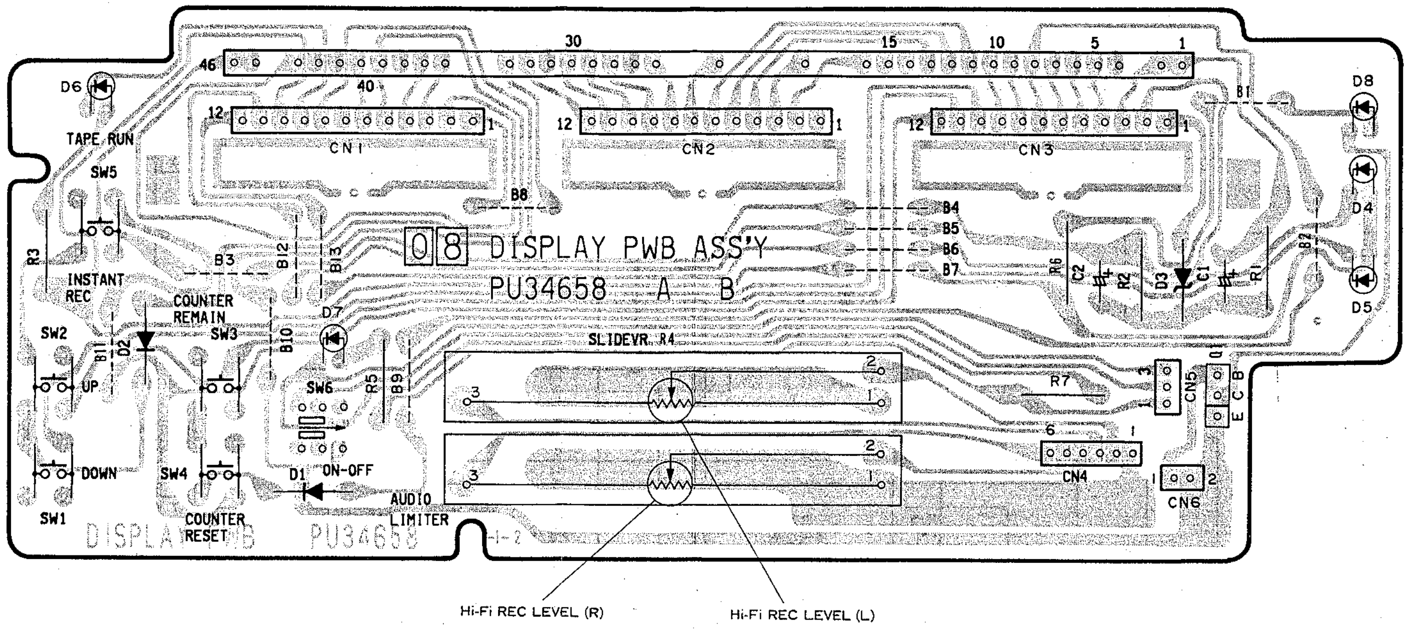


DTC124F
DTC144F
DTC144WF

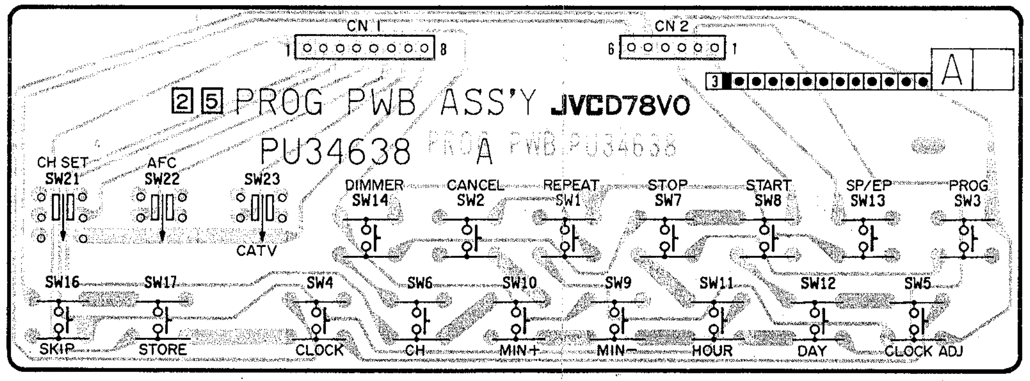



D19
D20
Q6
Q8
C14
R17
R18
R19
R20
CN5
R36
R35
R34
R33
CN6
R41
B2
C21
C6
TIMER CLOCK
R37
Q4
R46
R44
CN2
CN1
12

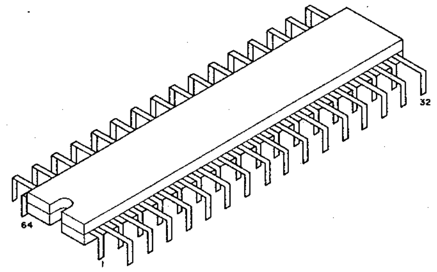
## — DISPLAY —


D6
TAPE RUN
SW5
R3
INSTANT REC
SW2
UP
SW1
DOWN
SW4
COUNTER RESET
COUNTER REMAIN
SW3
B3
B11
D2
B12
B13
B10
D7
SW6
R5
B9
D1
ON-OFF
AUDIO LIMITER
46
40
30
15
10
5
1
12
CN1
CN2
CN3
B8
B4
B5
B6
B7
08 DISPLAY PWB ASS'Y
PU34658 A B
SLIDEVR. R4
R7
CN5
Q1
CN4
CN6
D8
D4
D5
D3
C1
C2
R1
R2
R6
B1
B2
DISPLAY PWB PU34658
Hi-Fi REC LEVEL (R)
Hi-Fi REC LEVEL (L)

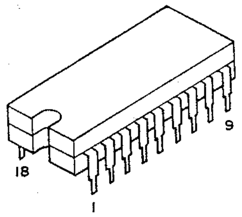
## — PROGRAM —


CN1
CN2
A
25 PROG PWB ASS'Y JVCD78V0
PU34638
PROG PWB PU34638
CH SET SW21
AFC SW22
SW23
CATV
DIMMER SW14
CANCEL SW2
REPEAT SW1
STOP SW7
START SW8
SP/EP SW13
PROG SW3
SW16
SW17
SW4
SW6
SW10
SW9
SW11
SW12
SW5
SKIP
STORE
CLOCK
CH
MIN+
MIN−
HOUR
DAY
CLOCK ADJ

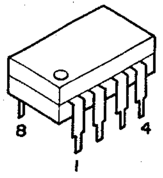
UPD7519G-088-36



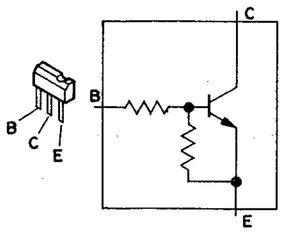
MN1219



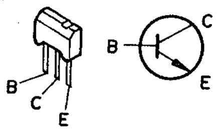
TL066CP



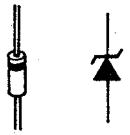
DTC124F
DTC144F
DTC144WF



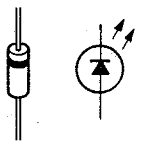
2SD638
2SD636



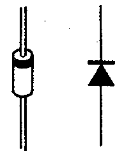
HZ6A-1L
HZ7A2L
HZ9A-3



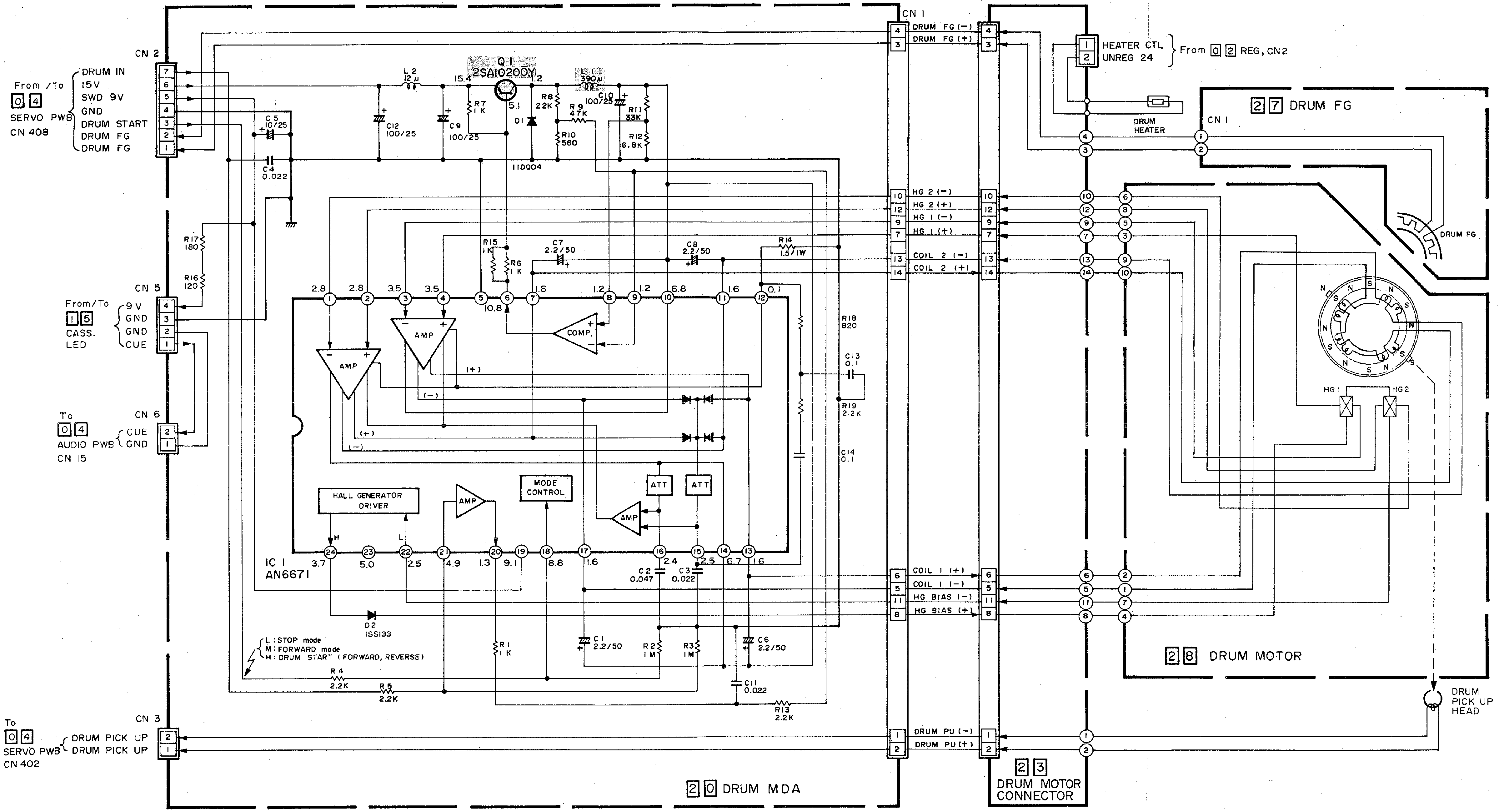
LTZ-R15



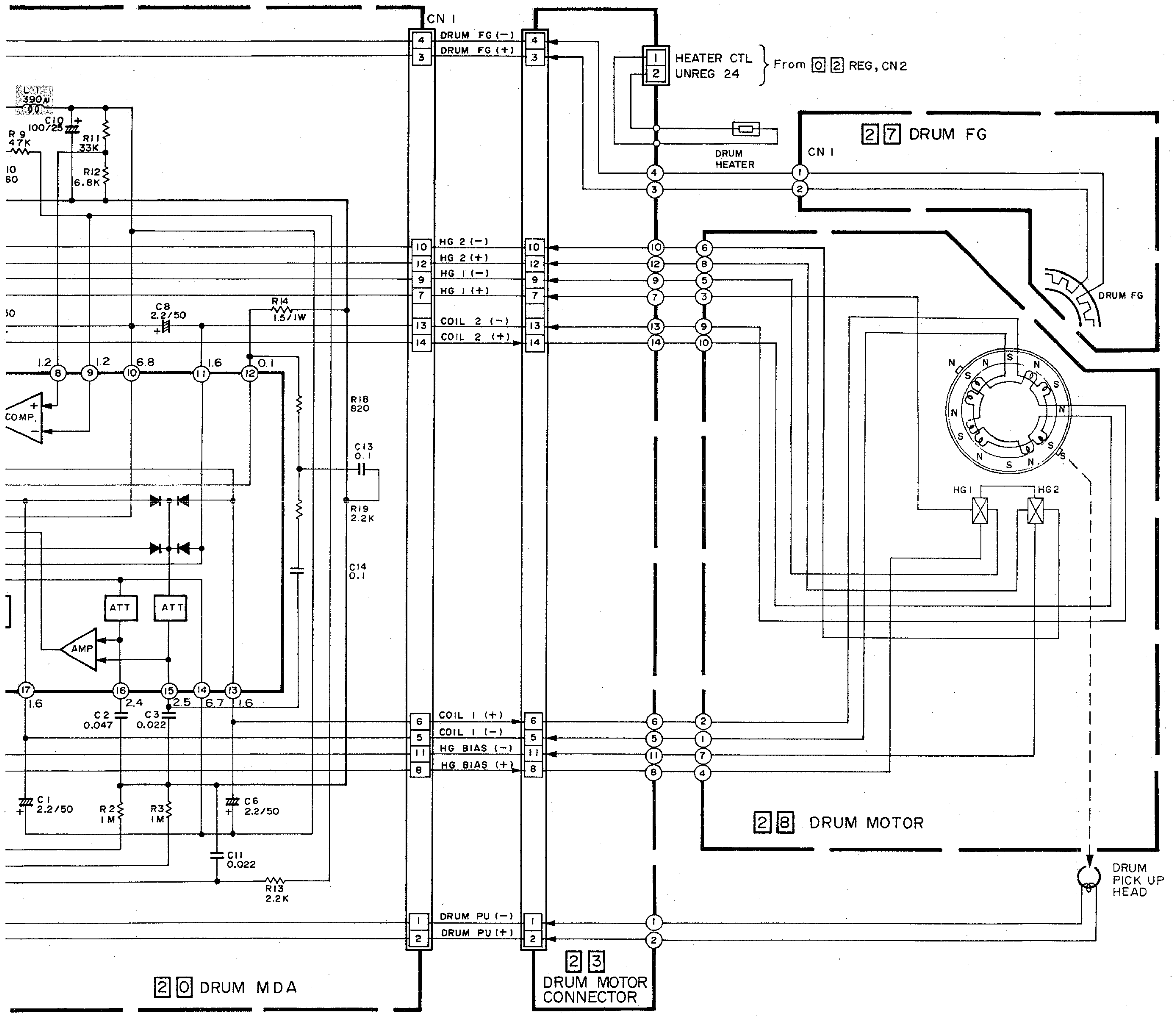
MA150
MA161



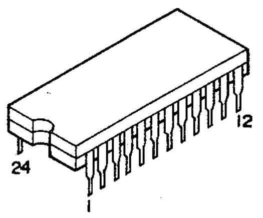
## 4.33 DRUM MDA, DRUM MOTOR CONNECTOR, DRUM MOTOR AND DRUM FG SCHEMATIC DIAGRAMS


CN 2
DRUM IN
15V
SWD 9V
GND
DRUM START
DRUM FG
DRUM FG
From /To
0 4
SERVO PWB
CN 408
C5 10/25
C4 0.022
L2 12μ
15.4
Q1 2SA1020OY
12
5.1
R7 1K
C12 100/25
C9 100/25
D1
11D004
R8 22K
R9 47K
R10 560
L1 390μ
C10 100/25
R11 33K
R12 6.8K
R17 180
R16 120
CN 5
9V
GND
GND
CUE
From/To
1 5
CASS. LED
CN 6
CUE
GND
To
0 4
AUDIO PWB
CN 15
R15 1K
R6 1K
C7 2.2/50
C8 2.2/50
R14 1.5/1W
2.8
2.8
3.5
3.5
10.8
1.6
1.2
1.2
6.8
1.6
0.1
AMP
AMP
COMP.
(+)
(−)
(+)
(−)
R18 820
C13 0.1
R19 2.2K
C14 0.1
HALL GENERATOR DRIVER
H
L
AMP
MODE CONTROL
ATT
ATT
AMP
IC 1
AN6671
3.7
5.0
2.5
4.9
1.3
9.1
8.8
1.6
2.4
2.5
6.7
1.6
C2 0.047
C3 0.022
D2 1SS133
L: STOP mode
M: FORWARD mode
H: DRUM START (FORWARD, REVERSE)
R1 1K
C1 2.2/50
R2 1M
R3 1M
C6 2.2/50
C11 0.022
R4 2.2K
R5 2.2K
R13 2.2K
CN 3
DRUM PICK UP
DRUM PICK UP
To
0 4
SERVO PWB
CN 402
2 0 DRUM MDA
CN 1
DRUM FG (−)
DRUM FG (+)
HG 2 (−)
HG 2 (+)
HG 1 (−)
HG 1 (+)
COIL 2 (−)
COIL 2 (+)
COIL 1 (+)
COIL 1 (−)
HG BIAS (−)
HG BIAS (+)
DRUM PU (−)
DRUM PU (+)
2 3 DRUM MOTOR CONNECTOR
HEATER CTL
UNREG 24
From 0 2 REG, CN2
DRUM HEATER
2 7 DRUM FG
CN 1
DRUM FG
N S N S N S N S N S N S
HG1
HG2
2 8 DRUM MOTOR
DRUM PICK UP HEAD

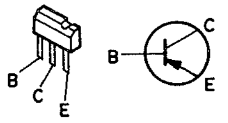
NC


CN 1
DRUM FG (−)
DRUM FG (+)
HEATER CTL
UNREG 24
From 02 REG, CN2
DRUM HEATER
27 DRUM FG
CN 1
DRUM FG
390
C10 100/25
R 9 47K
R11 33K
R12 6.8K
C8 2.2/50
R14 1.5/1W
HG 2 (−)
HG 2 (+)
HG 1 (−)
HG 1 (+)
COIL 2 (−)
COIL 2 (+)
1.2
1.2
6.8
1.6
0.1
COMP.
R18 820
C13 0.1
R19 2.2K
C14 0.1
ATT
ATT
AMP
1.6
2.4
2.5
6.7
1.6
C2 0.047
C3 0.022
COIL 1 (+)
COIL 1 (−)
HG BIAS (−)
HG BIAS (+)
C1 2.2/50
R2 1M
R3 1M
C6 2.2/50
C11 0.022
R13 2.2K
HG1
HG2
N
S
28 DRUM MOTOR
DRUM PICK UP HEAD
DRUM PU (−)
DRUM PU (+)
20 DRUM MDA
23 DRUM MOTOR CONNECTOR

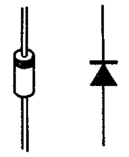
AN6671



2SA1020



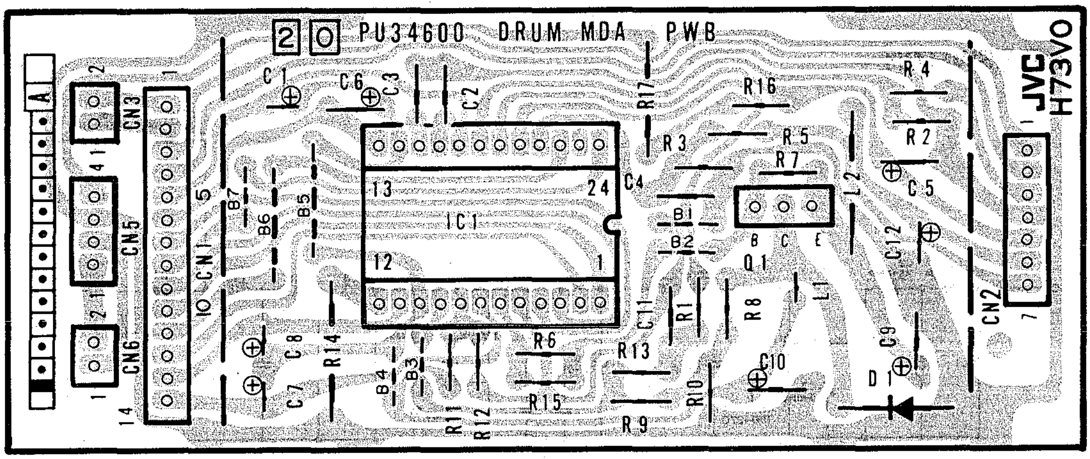
11D004
1SS133



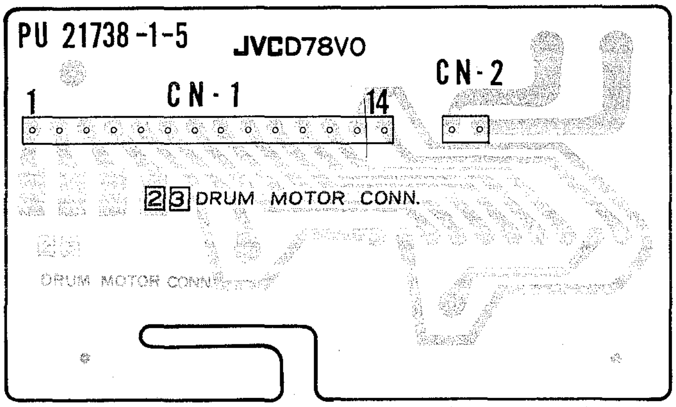
**NOTES:** Unless otherwise specified.
1. All resistance values are in ohms. (1/6 W)
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. Voltages are DC-measured with a digital voltmeter during recording (SP mode).
5. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

## 4.34 DRUM MDA, DRUM MOTOR CONN, DRUM MOTOR AND DRUM FG CIRCUIT BOARDS

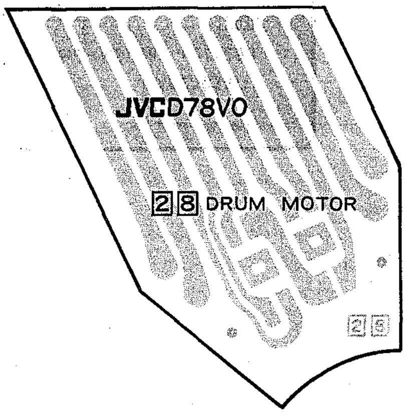
### – DRUM MDA –


20 PU34600 DRUM MDA PWB
JVC H73VO
A
CN3
CN5
CN6
CN1
CN2
IC1
C1
C6
C3
C2
R17
R16
R4
R3
R5
R2
R7
C4
C5
B1
B2
Q1
B C E
L2
C12
L1
B7
B6
B5
13
24
12
1
5
10
14
C8
C7
R14
B4
B3
R6
R13
C11
R1
R8
C10
C9
D1
R15
R11
R12
R9
R10

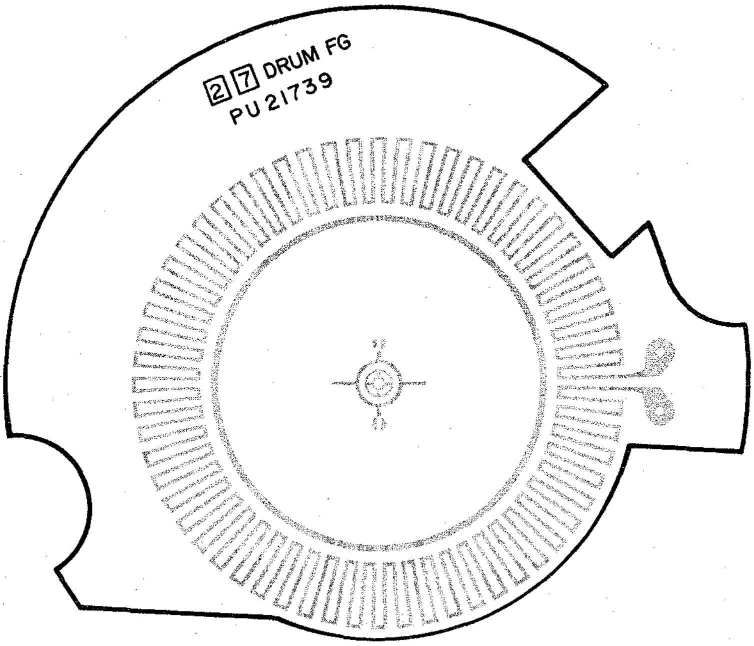
### – DRUM MOTOR CONNECTOR –


PU 21738-1-5
JVCD78VO
CN-1
CN-2
1
14
23 DRUM MOTOR CONN.

### – DRUM MOTOR –

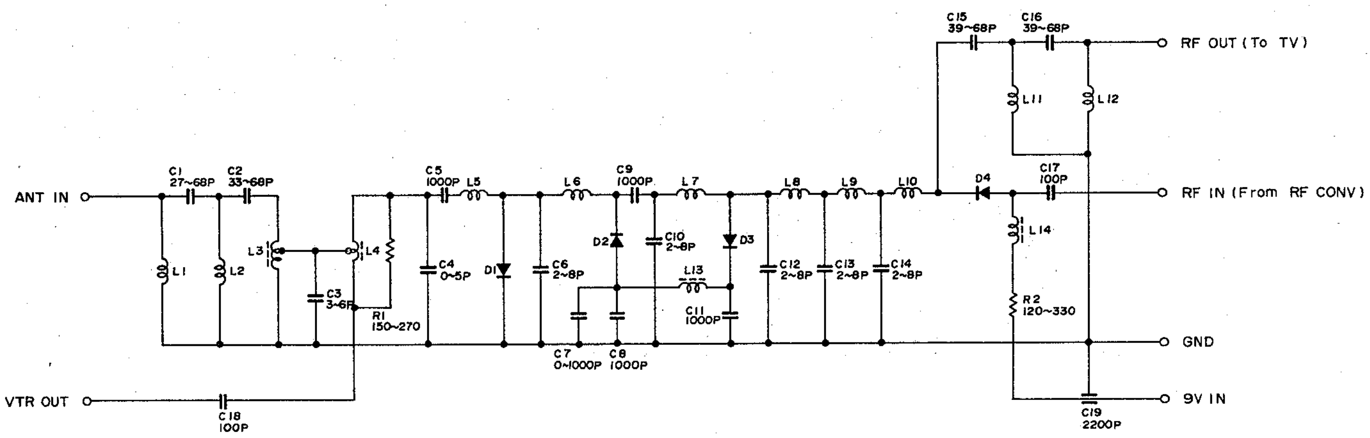

JVCD78VO
28 DRUM MOTOR
25

### – DRUM FG –


27 DRUM FG
PU 21739

## 4.35 RF SWITCH SCHEMATIC DIAGRAM AND CIRCUIT BOARD

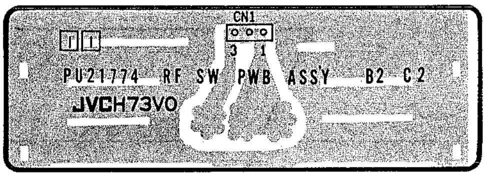
### – RF SWITCH –


C15 39~68P
C16 39~68P
RF OUT (To TV)
L11
L12
C1 27~68P
C2 33~68P
C5 1000P
L5
L6
C9 1000P
L7
L8
L9
L10
D4
C17 100P
ANT IN
RF IN (From RF CONV)
L3
L4
L1
L2
C3 3~6P
R1 150~270
C4 0~5P
D1
D2
C6 2~8P
C10 2~8P
D3
L13
C11 1000P
C12 2~8P
C13 2~8P
C14 2~8P
L14
R2 120~330
C7 0~1000P
C8 1000P
GND
VTR OUT
C18 100P
9V IN
C19 2200P

(+Bs ; G or OPEN = ANT IN → TV OUT
+Bs ; 9V = MOD IN → TV OUT)

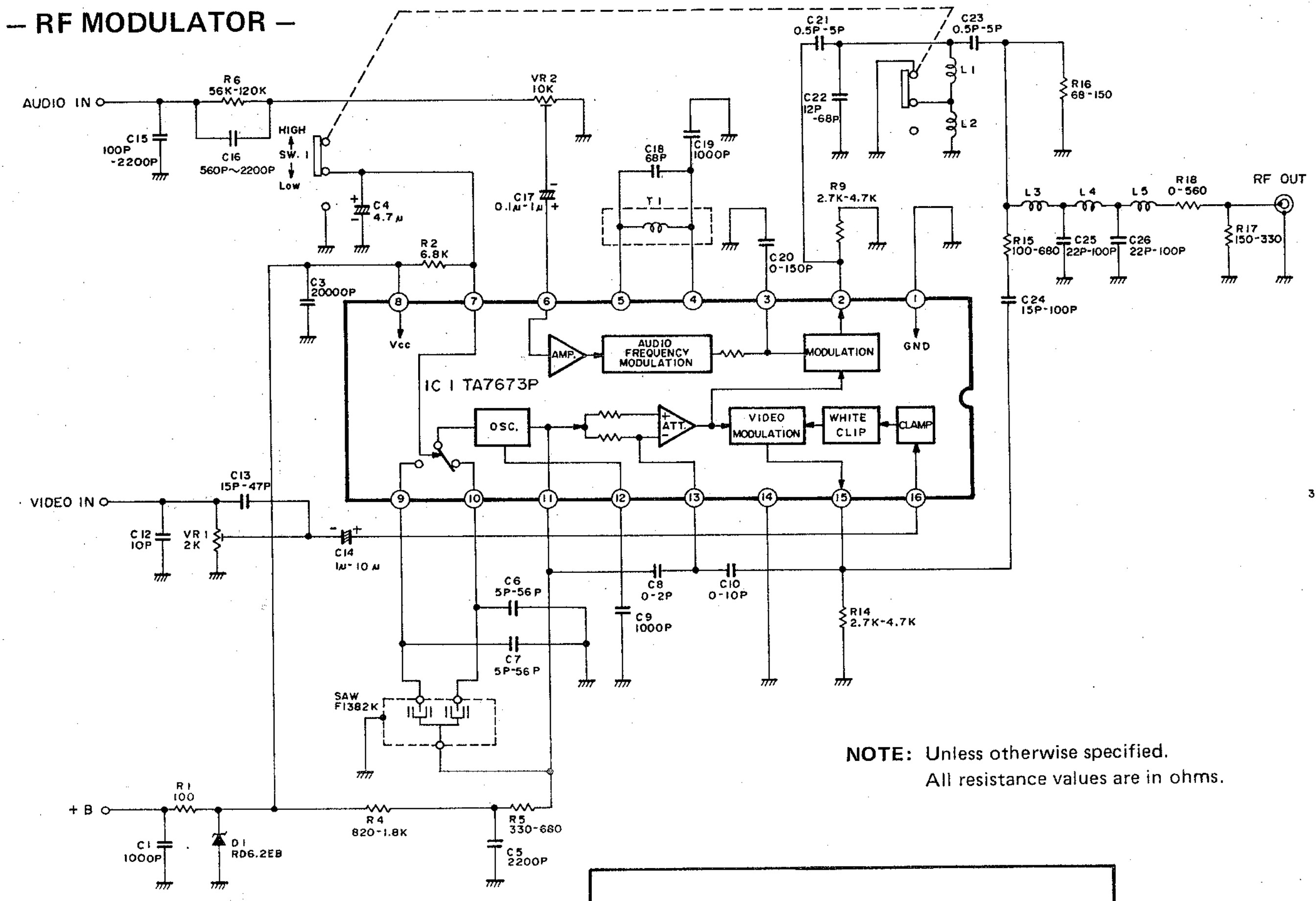
**NOTES:** Unless otherwise specified.
1. All resistance values are in ohms.
2. D1 to D3 : 1SV128 or Equivalent.
3. D4 : 1SV157 or M1105 or Equivalent.

### – RF SWITCH BOARD –


CN1
3
1
PU21774 RF SW PWB ASS'Y B2 C2
JVCH73VO

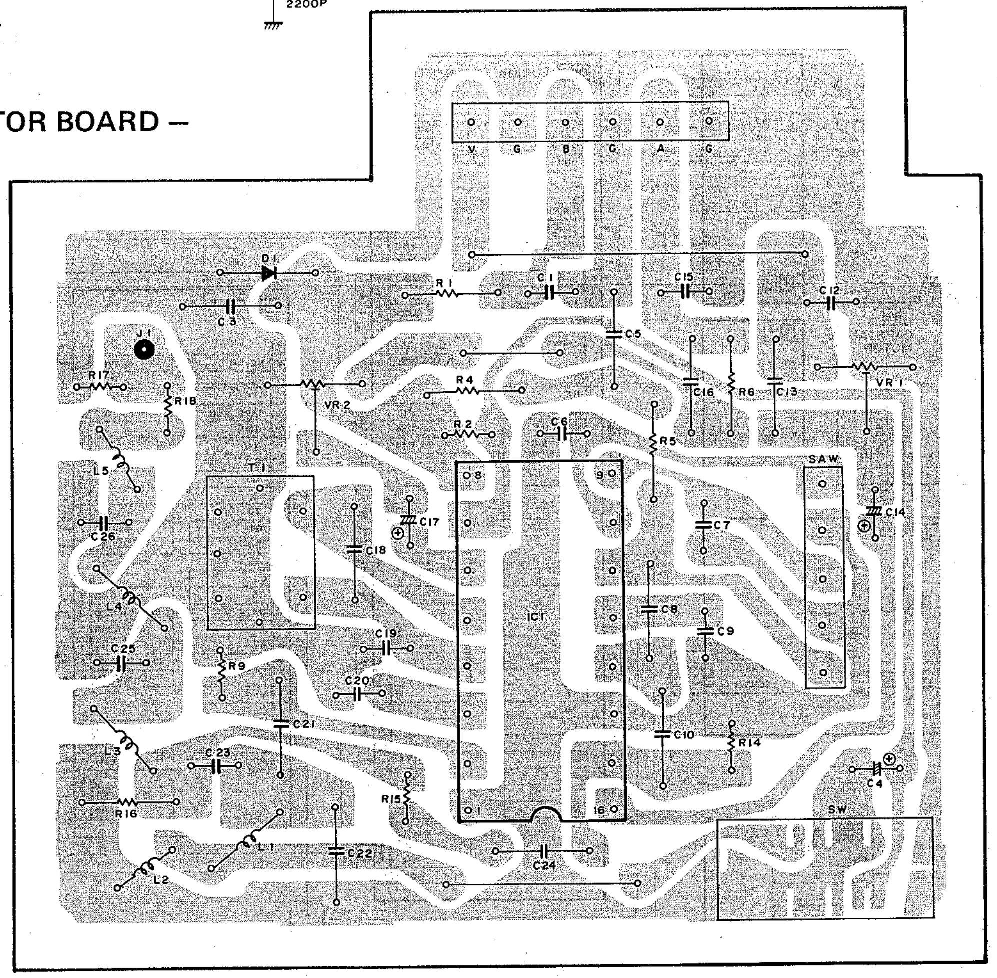
## 4.36 RF MODULATOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD

### – RF MODULATOR –

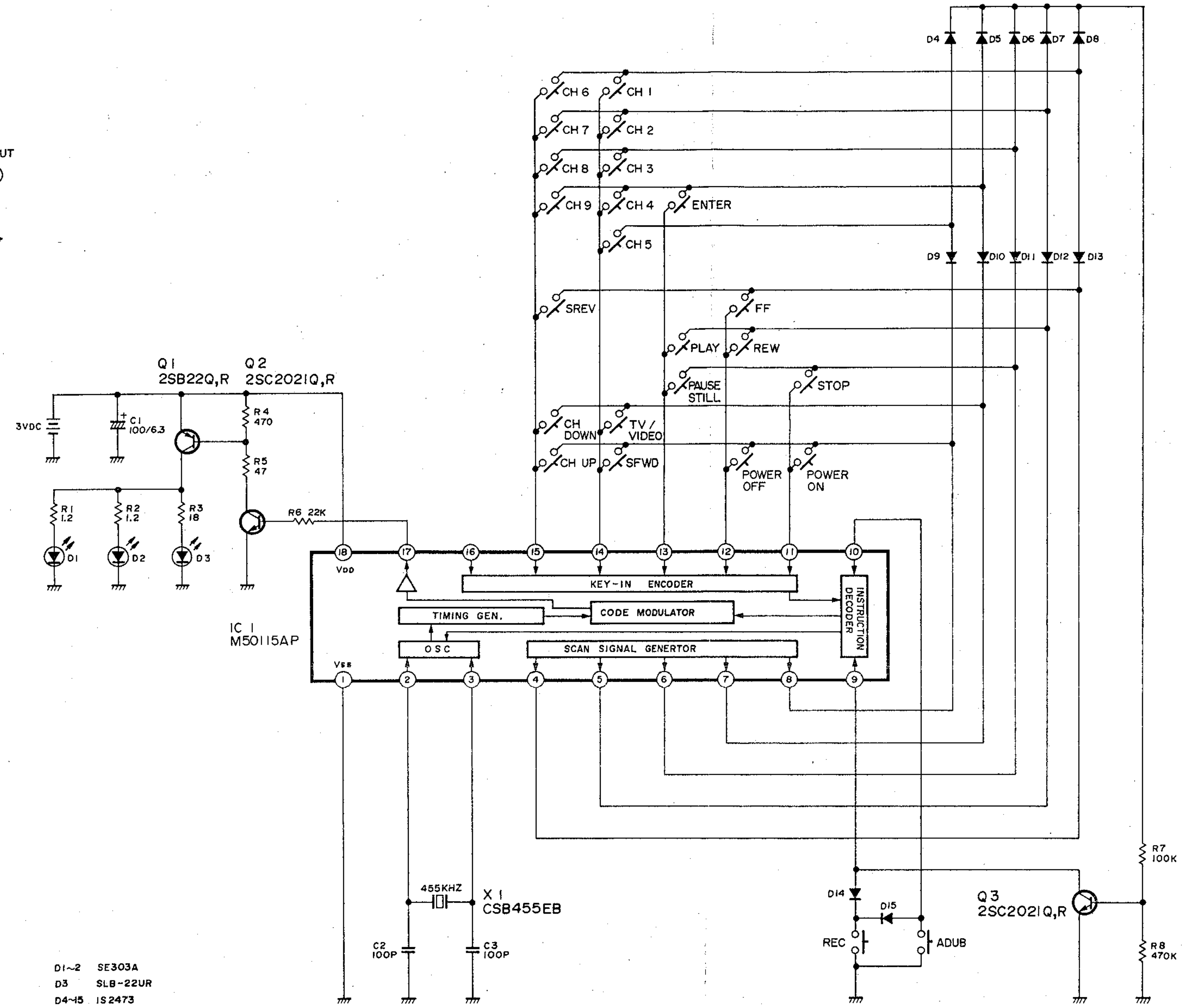

AUDIO IN
R6 56K-120K
C15 100P -2200P
C16 560P~2200P
HIGH SW. 1 Low
C4 4.7μ
VR 2 10K
C17 0.1μ-1μ
C18 68P
C19 1000P
T 1
C21 0.5P-5P
C22 12P -68P
C23 0.5P-5P
L 1
L 2
R16 68-150
R9 2.7K-4.7K
C20 0-150P
L3
L4
L5
R18 0-560
RF OUT
R15 100-680
C25 22P-100P
C26 22P-100P
R17 150-330
C24 15P-100P
R2 6.8K
C3 20000P
Vcc
GND
AMP.
AUDIO FREQUENCY MODULATION
MODULATION
IC 1 TA7673P
OSC.
ATT
VIDEO MODULATION
WHITE CLIP
CLAMP
VIDEO IN
C13 15P-47P
C12 10P
VR 1 2K
C14 1μ-10μ
C6 5P-56P
C7 5P-56P
C8 0-2P
C9 1000P
C10 0-10P
R14 2.7K-4.7K
SAW F1382K
+ B
R 1 100
C 1 1000P
D 1 RD6.2EB
R 4 820-1.8K
R5 330-680
C5 2200P

**NOTE:** Unless otherwise specified.
All resistance values are in ohms.

### – RF MODULATOR BOARD –

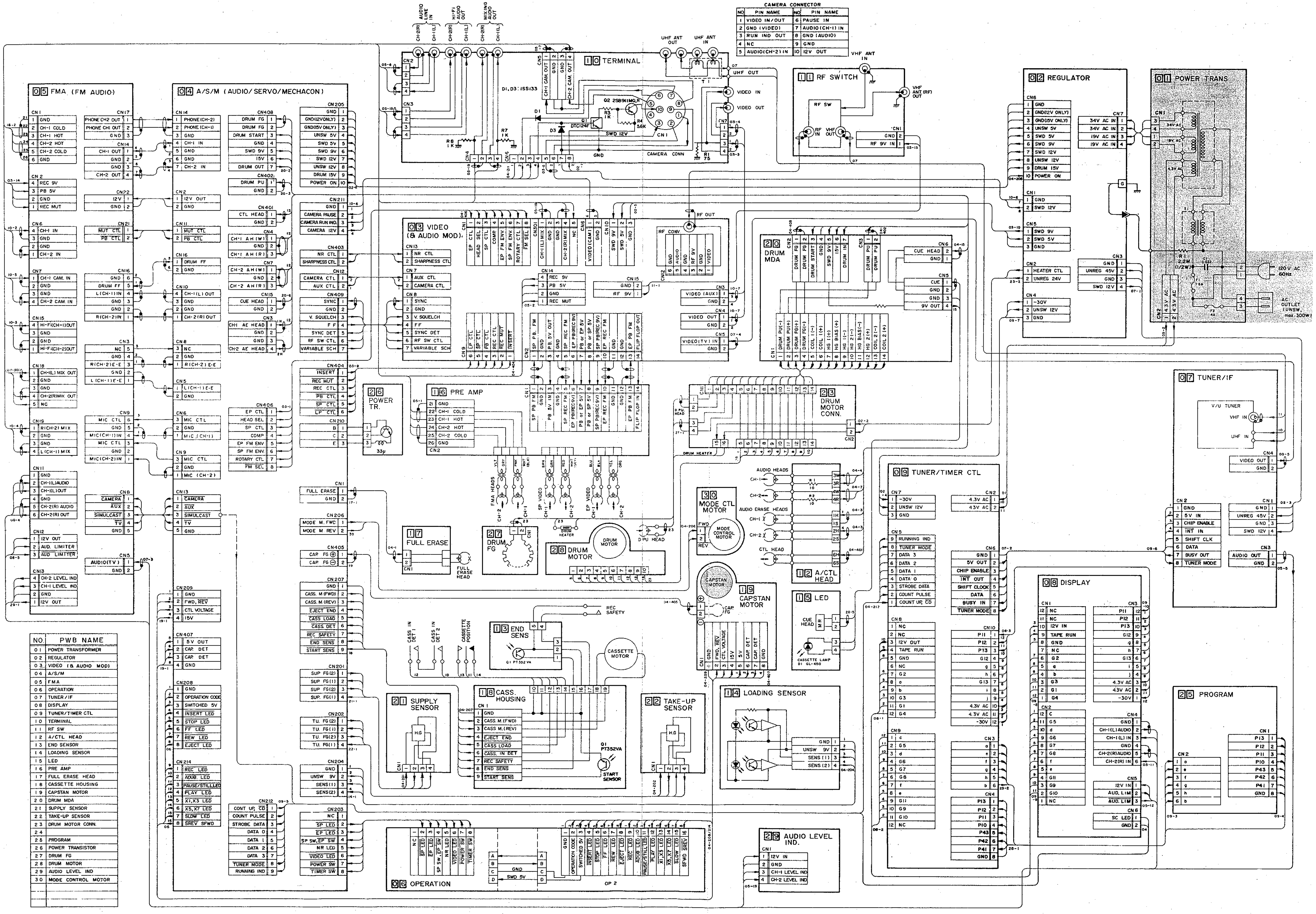

V
G
B
G
A
G
J 1
D 1
C 3
R 1
C 1
C15
C12
R17
R18
VR 2
R4
R6
C16
C13
VR 1
R 2
C6
R5
SAW
L5
T 1
C17
C7
C14
C26
C18
IC1
L4
C8
C9
C25
C19
R9
C20
C21
C10
R14
L3
C23
C4
R16
R15
SW
L2
L1
C22
C24

## 4.37 REMOTE CONTROLLER SCHEMATIC DIAGRAM


D4
D5
D6
D7
D8
CH 6
CH 1
CH 7
CH 2
CH 8
CH 3
CH 9
CH 4
ENTER
CH 5
D9
D10
D11
D12
D13
SREV
FF
PLAY
REW
PAUSE STILL
STOP
CH DOWN
TV / VIDEO
CH UP
SFWD
POWER OFF
POWER ON
Q1 2SB22Q,R
Q2 2SC2021Q,R
3VDC
C1 100/6.3
R4 470
R5 47
R1 1.2
R2 1.2
R3 18
D1
D2
D3
R6 22K
VDD
KEY-IN ENCODER
TIMING GEN.
CODE MODULATOR
INSTRUCTION DECODER
OSC
SCAN SIGNAL GENERTOR
IC 1 M50115AP
Vss
455KHZ
X 1 CSB455EB
C2 100P
C3 100P
D14
D15
REC
ADUB
Q3 2SC2021Q,R
R7 100K
R8 470K

D1~2 SE303A
D3 SLB-22UR
D4~15 1S2473

## 4.38 BOARD INTERCONNECTION


05 FMA (FM AUDIO)
04 A/S/M (AUDIO/SERVO/MECHACON)
10 TERMINAL
11 RF SWITCH
02 REGULATOR
01 POWER TRANS
03 VIDEO (& AUDIO MOD)
20 DRUM MDA
26 POWER TR.
16 PRE AMP
23 DRUM MOTOR CONN.
07 TUNER/IF
17 FULL ERASE
27 DRUM FG
28 DRUM MOTOR
30 MODE CTL MOTOR
19 CAPSTAN MOTOR
12 A/CTL HEAD
15 LED
09 TUNER/TIMER CTL
08 DISPLAY
13 END SENS
21 SUPPLY SENSOR
18 CASS. HOUSING
22 TAKE-UP SENSOR
14 LOADING SENSOR
25 PROGRAM
29 AUDIO LEVEL IND.
06 OPERATION
OP 2
AUDIO LINE IN
HI-FI AUDIO OUT
MIXING AUDIO OUT
UHF ANT OUT
UHF ANT IN
VHF ANT IN
UHF OUT
VIDEO IN
VIDEO OUT
CAMERA CONN
RF OUT
120V AC 60Hz
AC OUTLET (UNSW. max. 300W)
CASSETTE MOTOR
START SENSOR
REC SAFETY

CAMERA CONNECTOR

| NO | PIN NAME | NO | PIN NAME |
|---|---|---|---|
| 1 | VIDEO IN/OUT | 6 | PAUSE IN |
| 2 | GND (VIDEO) | 7 | AUDIO (CH-1) IN |
| 3 | RUN IND OUT | 8 | GND (AUDIO) |
| 4 | NC | 9 | GND |
| 5 | AUDIO (CH-2) IN | 10 | 12V OUT |

| NO. | PWB NAME |
|---|---|
| 01 | POWER TRANSFORMER |
| 02 | REGULATOR |
| 03 | VIDEO (& AUDIO MOD) |
| 04 | A/S/M |
| 05 | FMA |
| 06 | OPERATION |
| 07 | TUNER/IF |
| 08 | DISPLAY |
| 09 | TUNER/TIMER CTL |
| 10 | TERMINAL |
| 11 | RF SW |
| 12 | A/CTL HEAD |
| 13 | END SENSOR |
| 14 | LOADING SENSOR |
| 15 | LED |
| 16 | PRE AMP |
| 17 | FULL ERASE HEAD |
| 18 | CASSETTE HOUSING |
| 19 | CAPSTAN MOTOR |
| 20 | DRUM MDA |
| 21 | SUPPLY SENSOR |
| 22 | TAKE-UP SENSOR |
| 23 | DRUM MOTOR CONN. |
| 24 | |
| 25 | PROGRAM |
| 26 | POWER TRANSISTOR |
| 27 | DRUM FG |
| 28 | DRUM MOTOR |
| 29 | AUDIO LEVEL IND |
| 30 | MODE CONTROL MOTOR |
| | |
| | |
| | |

# SECTION 5
# EXPLODED VIEWS AND PARTS LIST

## SAFETY PRECAUTION

**Parts identified by ⚠ symbol are critical for safety.**
**Replace only with specified part numbers.**

5.1 STANDARD PART NUMBER CODING

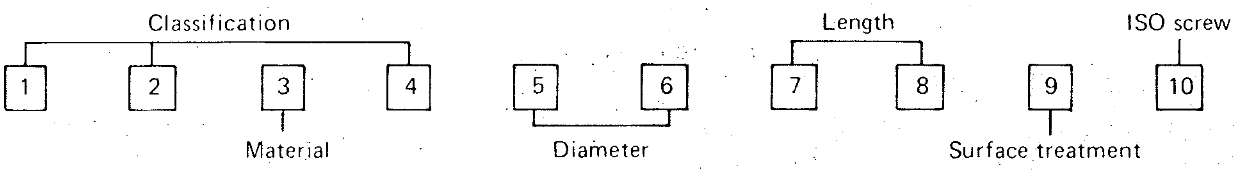
5.1.1 Screw coding .......... 5-2

5.2 EXPLODED VIEWS AND PARTS LIST

5.2.1 Packing assembly .......... 5-3
5.2.2 Cabinet assembly .......... 5-4
5.2.3 Chassis assembly .......... 5-6
5.2.4 Mechanism assembly (1) .......... 5-8
5.2.5 Mechanism assembly (2) .......... 5-10
5.2.6 Cassette housing assembly .......... 5-12
5.2.7 Program assembly .......... 5-14
5.2.8 Remote control unit assembly .......... 5-16

## 5.1 STANDARD PART NUMBER CODING

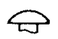
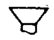
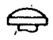
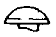
### 5.1.1 Screw coding



**Classification** (first digit)

| Symbol Letter | Name |
|---|---|
| S | Normal screw |
| N | Assembly screw |
| L | " |
| D | " |
| M | Wood screw |
| F | Feather screw |
| T | Set screw |
| Y | " |
| B | Bolt |
| N | Nut |
| W | Washer |
| R | E-ring |
| E | Eyelet |
| P | Spring |
| G | Washer head screw |

**Shape of Screw Head** (second digit)

| Symbol Letter | | Shape of Screw Head |
|---|---|---|
| P |  | Pan head |
| S |  | Flat countersunk head |
| H | | Oval countersunk head |
| D |  | Binding head |
| R | | Round head |
| B | | Round head |
| T |  | Truss head |

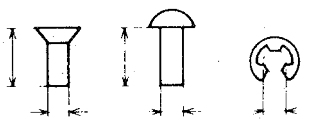
**Material** (third digit)

| Symbol Letter | Material |
|---|---|
| S | Steel |
| E | Stainless steel |
| C | Cast iron |
| U | Bronze |
| B | Brass |
| P | Phosphor bronze |
| N | German silver |
| Y | Brass |
| A | Aluminum |
| Z | Zinc alloy |
| K | Polycarbonate |

**Type of Screw** (fourth digit)

| Symbol Letter | Type of Screw |
|---|---|
| P | Cross-Recessed head screw |
| A | Tapping screw |
| B | Special tapping screw |
| T | Special tapping screw |
| E | Special tapping screw |
| F | Special tapping screw |

**Diameter and Length of Screw** (fifth – eighth digit)



– Example –

S P B P 3 0 0 6 Z S

(Diameter x 10) (Length)

Diameter : 3 mm

Length : 6 mm

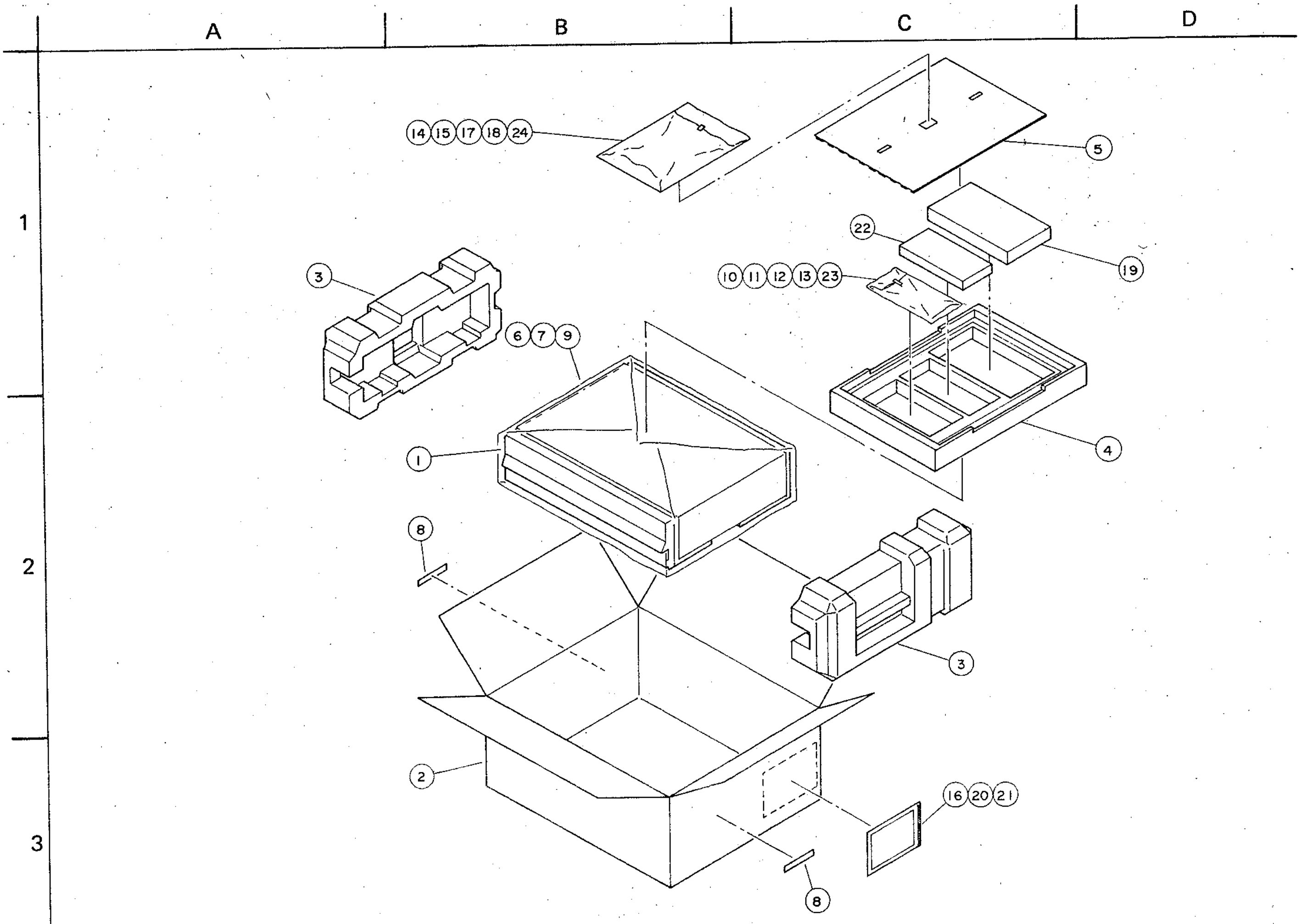
**Surface Treatment** (ninth digit)

| Symbol Letter | Surface Treatment |
|---|---|
| Z | Galvanization, dichromic acid treatment (MFZn2-C) |
| N | Nickel plating (MFNi2, MFNi1) |
| R | Chrome plating (MBCr2, MBCr1) |
| G | Silver plating (SP4) |
| W | Nichrome platings |
| P | Phosphite treatment |
| B | Bronze plating |

| Symbol Letter | Surface treatment |
|---|---|
| M | Black coloring after galvanization |
| A | Red coloring after galvanization |
| C | Blue coloring after galvanization |
| T | Green coloring after galvanization |
| V | Violet coloring after galvanization |
| F | Iron with black coloring |

## 5.2 EXPLODED VIEWS AND PARTS LIST

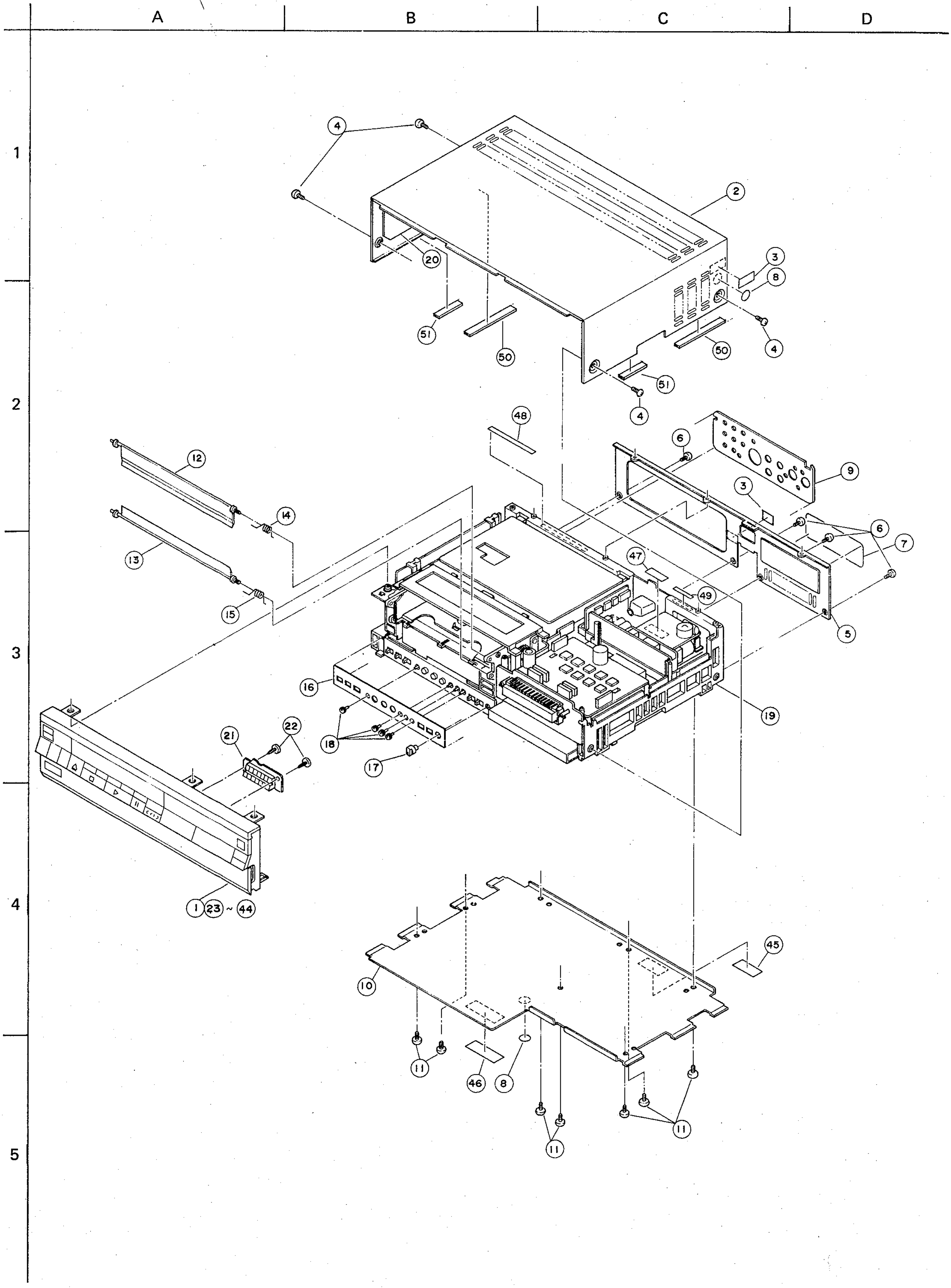
### 5.2.1 Packing assembly



– Packing and accessories list –

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| 1 | – | Cabinet Assembly | See Section 5.2.2. | 2-B | 1 |
| 2 | PQ30189-2-4 | Packing Case | U.S.A. | 3-B | 1 |
| | 〃 -4-4 | 〃 | CANADA | 3-B | 1 |
| 3 | PQ30190A-2 | Cushion Assembly | | 1-A, 2-C | 1 |
| 4 | PQ20085-1-1 | Accessory Case | | 2-D | 1 |
| 5 | PQ41033-1-1 | Sheet | | 1-D | 1 |
| 6 | PQ41027 | 〃 | | 1-B | 1 |
| 7 | PUM30021-33 | Poly Bag | | 1-B | 1 |
| 8 | PUP40329 | Serial No. Sticker | | 2-B, 3-C | 2 |
| 9 | PQ41026-1-1 | Protect Sheet | | 1-B | 1 |
| 10 | PU56142 | Pin Cord Assembly | | 1-B | 1 |
| ⚠ 11 | PU54394-2 | Cable Assembly | | 1-C | 1 |
| 12 | PU51305 | Matching Transformer | | 1-C | 1 |
| 13 | QPGA020-02005 | Poly Bag | | 1-C | 1 |
| ⚠ 14 | PU30425-636 | Instructions | U.S.A. | 1-B | 1 |
| ⚠ | 〃 -635 | 〃 | CANADA | 1-B | 1 |
| 15 | PU34278 | Instruction Card | CANADA only | 1-B | 1 |
| 16 | BT-20046B | Toll Free Card | U.S.A. only | 3-C | 1 |
| 17 | PU33941 | Caution Sheet | | 1-B | 1 |
| 18 | QPGA025-03505 | Poly Bag | | 1-B | 1 |
| 19 | PT-30U | Tape | | 1-D | 1 |
| 20 | BT-20062 | Warranty Card | U.S.A. | 3-C | 1 |
| | BT-20025G | 〃 | CANADA | 3-C | 1 |
| 21 | PU54821 | Poly Bag | for Warranty Card | 3-C | 1 |
| 22 | – | Remote Control Unit | See Section 5.2.8. | 1-C | 1 |
| 23 | UM-3DJ2P | Battery | | 1-C | 2 |
| 24 | BT-20071 | Instruction Guide | CANADA only | 1-B | 1 |

### 5.2.2 Cabinet assembly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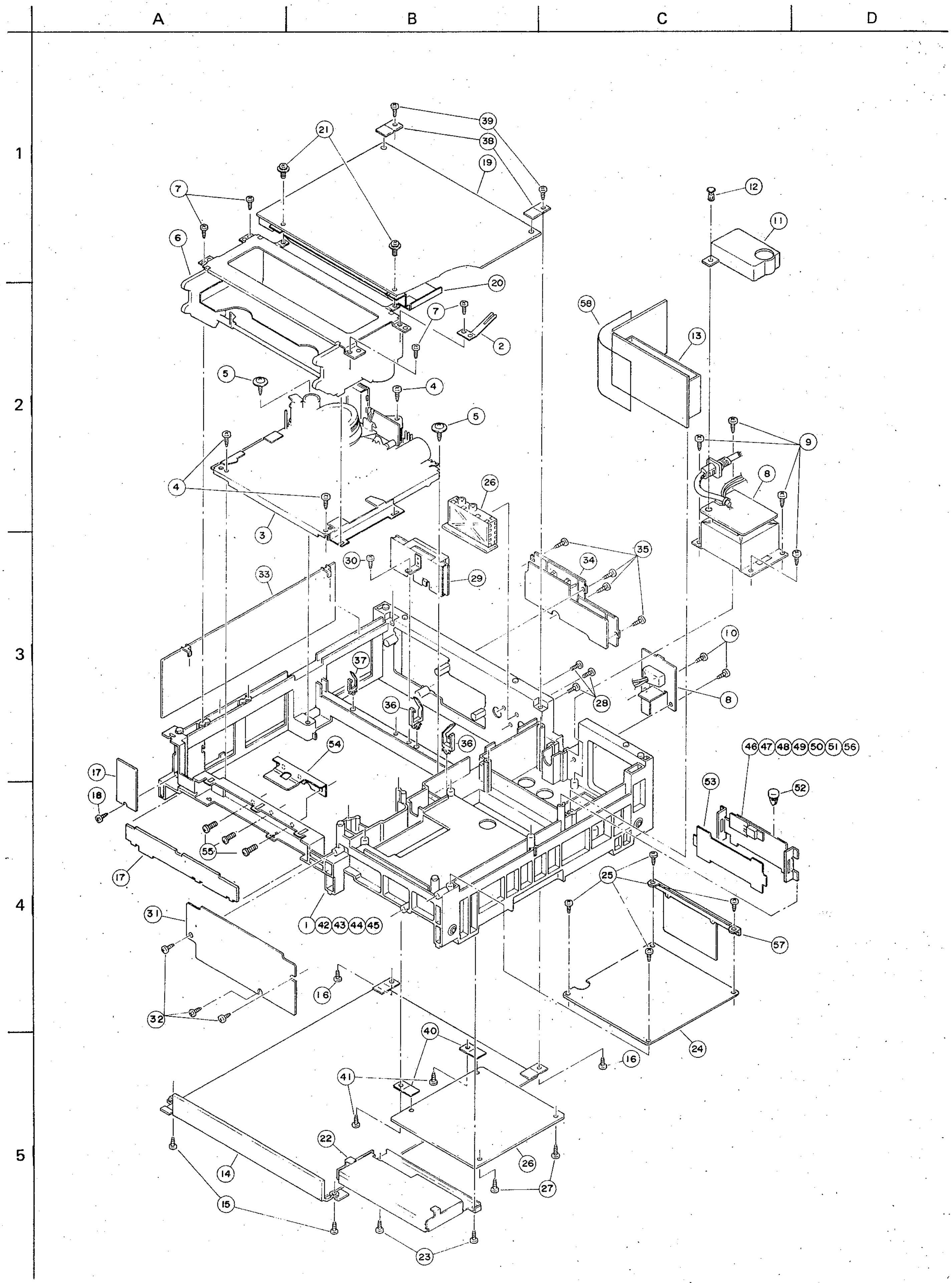
**— Cabinet assembly list —**

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| ⚠ 1 | PQ10042B-3 | Front Panel Assembly | Incl. ㉓ – ㊹ | 4-A | 1 |
| ⚠ 2 | PQ10038-2-3 | Top Cover | | 1-C | 1 |
| 3 | PU52670 | Patent Label | U.S.A. (Rear Panel) | 2-C | 1 |
| | PU51566 | " | CANADA (Top Cover) | 1-C | 1 |
| 4 | SDSP3010M | Screw | | 1-B, 2-C | 4 |
| ⚠ 5 | PQ10039-2 | Rear Panel | | 3-D | 1 |
| 6 | SDSF3010M | Tapping Screw | | 2-C, 2-D | 4 |
| ⚠ 7 | PU34697-2-5 | Rating Label | | 3-D | 1 |
| 8 | PU53146 | Caution Label | | 1-C, 5-B | 2 |
| ⚠ 9 | PQ20033-2 | Connector Label | | 2-D | 1 |
| ⚠ 10 | PQ10040-1-4 | Bottom Plate | | 4-B | 1 |
| 11 | SDSA3010R | Tapping Screw | | 5-B, 5-C | 7 |
| ⚠ 12 | PQ30107AF-11 | Upper Door Assembly | | 2-A | 1 |
| ⚠ 13 | PQ30030-20-12 | Lower Door | | 3-A | 1 |
| 14 | PQ40104-2 | Upper Spring | | 2-B | 1 |
| 15 | PQ40472 | Lower Spring | | 3-A | 1 |
| 16 | PQ20034-4 | Jack Board Label | | 3-B | 1 |
| 17 | PQ40791 | Select Knob | | 3-B | 1 |
| 18 | PQ40792 | Volume Knob (B) | | 3-B | 4 |
| 19 | – | Chassis Assembly | See Section 5.2.3. | 3-C | 1 |
| 20 | PQ40881 | Spacer | | 1-B | 1 |
| 21 | – | Audio Level Indicator | See Section 6.2.15. | 3-A | 1 |
| 22 | SDSA2606Z | Tapping Screw | | 3-B | 2 |
| 23 | PQ40370 | OTR Button | INSTANT REC | 4-A | 1 |
| 24 | PQM30002-141 | Spring | for ㉓ | 4-A | 1 |
| 25 | PQ30210-1-3 | CH. UP Button | | 4-A | 1 |
| 26 | PQM30002-77 | Spring | for ㉕ | 4-A | 1 |
| 27 | PQ30211-1-3 | CH. DOWN Button | | 4-A | 1 |
| 28 | PQM30002-77 | Spring | for ㉗ | 4-A | 1 |
| 29 | PQ30157-1-3 | SEARCH Button | | 4-A | 1 |
| 30 | PQ30203-2 | STOP Button | | 4-A | 1 |
| 31 | PQ30203 | PLAY Button | | 4-A | 1 |
| 32 | PQ30158 | EJECT Button | | 4-A | 1 |
| 33 | – | – | | – | – |
| 34 | PQM30002-75 | Spring | for ㉚ – ㉝ | 4-A | 6 |
| 35 | PQ30204 | PAUSE Button | | 4-A | 1 |
| 36 | PQM30002-77 | Spring | for ㉟ | 4-A | 1 |
| 37 | PQ30202-1-3 | REC Button | | 4-A | 1 |
| 38 | " -4-3 | A. DUB Button | | 4-A | 1 |
| 39 | " -5-3 | INSERT Button | | 4-A | 1 |
| 40 | PQM30002-141 | Spring | for ㊲ – ㊴ | 4-A | 3 |
| 41 | PQ30202-2-3 | FF Button | | 4-A | 1 |
| 42 | " -3-3 | REW Button | | 4-A | 1 |
| 43 | PQM30002-141 | Spring | for ㊶ and ㊷ | 4-A | 2 |
| 44 | PQ20037B-2 | Door Assembly | | 4-A | 1 |
| ⚠ 45 | PU46439 | CSA Label | CANADA only | 4-C | 1 |
| 46 | PU52047-3 | Label | | 5-B | 1 |
| 47 | PU56767-1-1 | Caution Label | | 3-C | 1 |
| 48 | PU51306-3-2 | Fuse Caution Label | | 2-B | 1 |
| 49 | PU56822 | " | | 3-C | 1 |
| 50 | PU56840 | Edge Cover | Rear | 2-B, 2-C | 2 |
| 51 | PU56840-2 | " | Front | 2-B, 2-C | 2 |

### 5.2.3 Chassis assembly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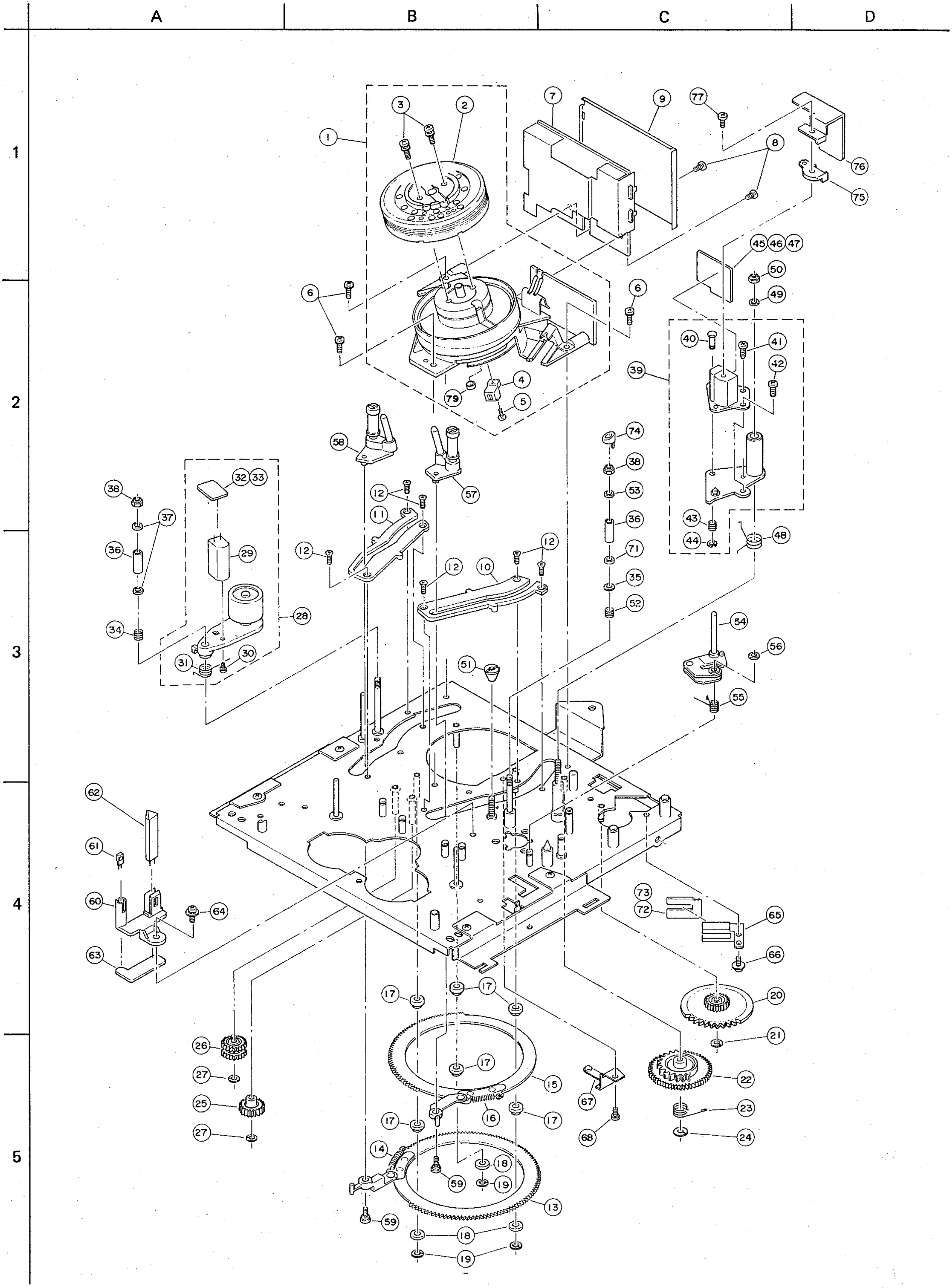
– Chassis assembly list –

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| ⚠ 1 | PQ10041B-4 | Chassis Assembly | Incl. ㊱ – ㊺ | 4-B | 1 |
| 2 | PQ40412 | Earth Plate | | 2-B | 1 |
| 3 | – | Mechanism Assembly | See Section 5.2.4 and 5.2.5. | 3-A | 1 |
| 4 | SDSA4012C | Tapping Screw | for Deck | 2-A, B | 3 |
| 5 | PQ40413 | Special Screw | for Deck | 2-A, B | 2 |
| 6 | – | Cassette Housing Assembly | See Section 5.2.6. | 1-A | 1 |
| 7 | SDSF3010Z | Tapping Screw | | 1-A, 2-B | 4 |
| 8 | – | Power Transformer Assembly | See Section 6.2.1. | 2-C, 3-C | 1 |
| 9 | SDSA4012C | Tapping Screw | for Power Transformer | 2-D | 4 |
| 10 | SDSF3010Z | " | for Power Bracket | 3-C | 2 |
| ⚠ 11 | PU34808-2 | AC Cover | | 1-C | 1 |
| 12 | E48729-001 | Plastic Rivet | | 1-C | 1 |
| 13 | – | Regulator Board Assembly | See Section 6.2.2. | 2-C | 1 |
| 14 | – | A/S/M Board Assembly | See Section 6.2.4. | 5-A | 1 |
| 15 | SDSF3010R | Tapping Screw | | 5-A | 2 |
| 16 | SDSF3010Z | " | for Hinge of A/S/M Board | 4-B, 5-C | 2 |
| 17 | – | Operation Board Assembly | See Section 6.2.6. | 3-A, 4-A | 1 |
| 18 | SDSF3010Z | Tapping Screw | | 4-A | 1 |
| 19 | – | Video Board Assembly | See Section 6.2.3. | 1-B | 1 |
| 20 | PU34816 | Shield Case | | 1-B | 1 |
| 21 | DPSP3006Z | Screw | | 1-B | 2 |
| 22 | – | Program Assembly | See Section 5.2.7. | 5-B | 1 |
| 23 | SDSF3010R | Tapping Screw | | 5-B | 2 |
| 24 | – | T/T Control Board Assembly | See Section 6.2.9. | 5-C | 1 |
| 25 | SDSF3010Z | Tapping Screw | | 4-C | 4 |
| 26 | – | Tuner/IF Board Assembly | See Section 6.2.7 and 6.2.11. | 2-B, 5-B | 1 |
| 27 | SDSF3010Z | Tapping Screw | | 5-C | 2 |
| 28 | SDSP3008M | Screw | for RF Switch | 3-C | 3 |
| 29 | – | Drum MDA Board Assembly | See Section 6.2.13. | 3-B | 1 |
| 30 | SDSF3010Z | Tapping Screw | | 3-B | 1 |
| 31 | – | Display Board Assembly | See Section 6.2.8. | 4-A | 1 |
| 32 | SDSF3010Z | Tapping Screw | | 4-A | 3 |
| 33 | – | FMA Board Assembly | See Section 6.2.5. | 3-A | 1 |
| 34 | – | Terminal Assembly | See Section 6.2.10. | 3-C | 1 |
| 35 | SDSF3010M | Tapping Screw | | 3-C | 4 |
| 36 | PU54969 | Wire Clamp | | 3-B | 2 |
| 37 | " -2 | " | | 3-B | 1 |
| 38 | PU56280-1-1 | Hinge | for Video Board | 1-B | 2 |
| 39 | SDSF3008Z | Tapping Screw | | 1-B | 2 |
| 40 | PU55778 | Hinge | for Tuner/IF Board | 5-B | 2 |
| 41 | SDSF3008Z | Tapping Screw | | 5-B | 2 |
| 42 | PU56778 | Earth Bracket (B) | | 4-B | 1 |
| 43 | SDSF3008Z | Tapping Screw | for ㊷ Earth Bracket (B) | 4-B | 1 |
| 44 | PQ40769-2 | Chassis Spring | | 4-B | 3 |
| 45 | PQ40770 | Supporter | | 4-B | 3 |
| 46 | PU56710 | Power Transistor Board | | 3-C | 1 |
| 47 | 2SD880Y | Transistor | Q01 | 3-C | 1 |
| 48 | PU56711 | Heat Sink | | 3-C | 1 |
| 49 | PU45375-4 | Transistor Spacer | | 3-D | 1 |
| 50 | PU41624-6 | Isolation Washer | | 3-D | 1 |
| 51 | SPSP3006Z | Screw | | 3-D | 2 |
| 52 | PU52913-2 | Spacer | | 4-D | 1 |
| 53 | PU56754 | " | | 4-C | 1 |
| 54 | PQ41024-1-1 | Bracket | | 3-B | 1 |
| 55 | SPSP2605Z | Screw | for (54) Bracket | 4-A | 3 |
| 56 | PU56181-330 | Choke Coil | for Power Transistor Board | 3-D | 1 |
| 57 | – | Timing Board Assembly | See Section 6.2.16 | 4-C | 1 |
| 58 | PU57036 | Sheet | for Regulator Board | 2-C | 1 |

## 5.2.4 Mechanism assembly (1)



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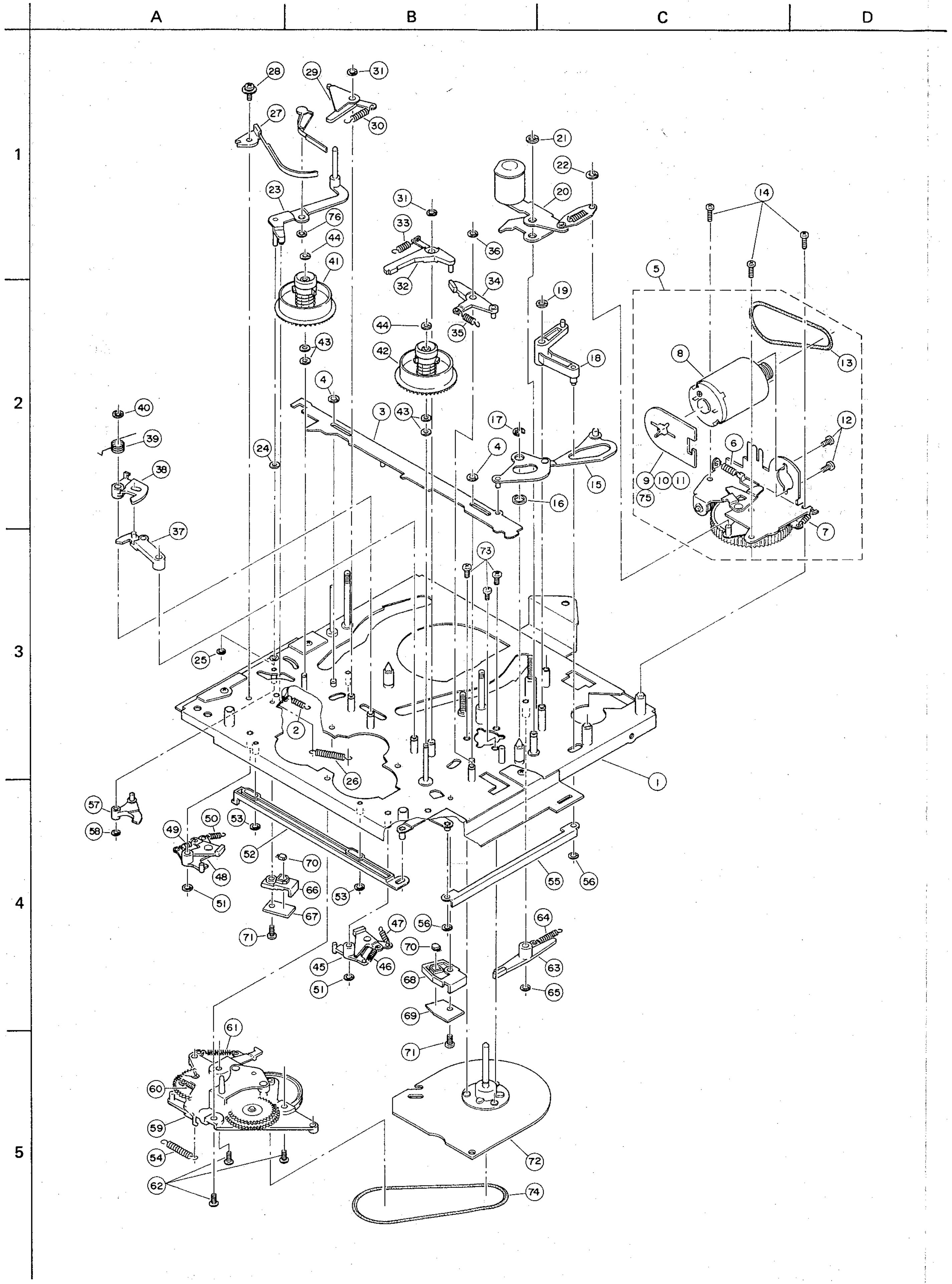
— Mechanism assembly (1) list —

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| ⚠ 1 | PUS36729A | Drum Ass'y | Incl. ②–⑤ | 1-B | 1 |
| 2 | PQ20013B | Upper Drum Ass'y | | 1-B | 1 |
| 3 | NDBP2608N | Screw | | 1-B | 2 |
| 4 | PQ40352A | Pick-up Head Ass'y | | 2-B | 1 |
| 5 | SPSH1735Z | Mini Screw | | 2-B | 1 |
| 6 | LPSP3008Z | Screw | | 2-B, C | 3 |
| 7 | — | Preamp Board Ass'y | See Section 6.2.12. | 1-C | 1 |
| 8 | PU54082-2 | Screw | | 1-C | 2 |
| 9 | PQ40305 | Shield Case | | 1-C | 1 |
| 10 | PQ30198 | Loading Guide (TU) | | 3-B | 1 |
| 11 | PQ30199 | 〃 (SUP) | | 2-B | 1 |
| 12 | SSSH2650Z | Screw | | 2-B, 3-B, C | 6 |
| 13 | PQ40233A-1 | Loading Ring Ass'y (SUP) | Incl. ⑭ | 5-C | 1 |
| 14 | PQM30001-151 | Spring | | 5-B | 1 |
| 15 | PQ40227A-1 | Loading Ring Ass'y (TU) | Incl. ⑯ | 5-C | 1 |
| 16 | PQM30001-151 | Spring | | 5-B | 1 |
| 17 | PQ40213 | Collar | | 4-B, 5-B, C | 6 |
| 18 | PQM30005-29 | 〃 | | 5-B | 3 |
| 19 | PQM30017-4 | Slit Washer | | 5-B | 3 |
| 20 | PQ30192A-2 | Loading Gear (1) Ass'y | | 4-C | 1 |
| 21 | PQM30017-12 | Slit Washer | | 5-C | 1 |
| 22 | PQ30193-1-2 | Loading Gear (2) | | 5-C | 1 |
| 23 | PQ40966 | Spring | | 5-C | 1 |
| 24 | PQM30017-13 | Slit Washer | | 5-C | 1 |
| 25 | PQ40219 | Connect Gear (1) | | 5-A | 1 |
| 26 | PQ40220 | 〃 (2) | | 5-A | 1 |
| 27 | PQM30017-8 | Slit Washer | | 5-A | 2 |
| 28 | PQ40368B-3 | Full Erase Head Arm Ass'y | Incl. ㉙ – ㉝ | 3-B | 1 |
| 29 | PU51263-2 | Erase Head | | 3-A | 1 |
| 30 | LPSP2004Z | Screw | | 3-A | 1 |
| 31 | PQ40427 | Spring | | 3-A | 1 |
| 32 | PU55308 | Head Board | for Full Erase Head | 2-A | 1 |
| 33 | PU43351-102 | Cap Housing | | 2-A | 1 |
| 34 | PQM30002-112 | Spring | | 3-A | 1 |
| 35 | PQ40477 | Spacer | | 3-C | 1 |
| 36 | PU53629-2 | Tape Guide (Guide Pole) | | 2-C, 3-A | 2 |
| 37 | PQ40752 | Guide Flange | | 2-A | 2 |
| 38 | PQ40353 | Nylon Nut | | 2-A, 2-C | 2 |
| 39 | PQ30200C | A/CTL Head Ass'y | Incl. ㊵ – ㊹ | 2-C | 1 |
| 40 | PQ40343 | Pin | | 2-C | 1 |
| 41 | PQ40435 | Screw | | 2-C | 1 |
| 42 | PQ40471 | 〃 | | 2-C | 1 |
| 43 | PQM30002-123 | Spring | | 2-C | 1 |
| 44 | REE2500 | E-ring | | 3-C | 1 |
| 45 | PU56638 | A/CTL Head Board | | 1-C | 1 |
| 46 | PU49215-6 | Cap Housing | CN1 | 1-C | 1 |
| 47 | QRD167J-100 | Carbon Resistor | R1, R2 | 1-D | 2 |
| 48 | PQ40428 | Spring | | 3-C | 1 |
| 49 | WNB3000 | Washer | | 2-C | 1 |
| 50 | PU49276 | Nylon Nut | | 1-C | 1 |
| 51 | PQ40922 | Taper Nut | | 3-B | 1 |
| 52 | PQM30002-102 | Spring | | 3-C | 1 |
| 53 | PQ40268-2 | Guide Flange | | 2-C | 1 |
| 54 | PQ40422B-3 | Guide Arm Ass'y | | 3-C | 1 |
| 55 | PQ40430 | Spring | | 3-C | 1 |
| 56 | PQM30017-8 | Slit Washer | | 3-C | 1 |
| 57 | PQ40354B | Pole Base Ass'y (TU) | | 2-B | 1 |
| 58 | PQ40357A | 〃 (SUP) | | 2-B | 1 |
| 59 | PQ40295 | Flange Screw | | 5-B | 2 |
| 60 | PQ30242-1-1 | LED Holder | | 4-A | 1 |
| 61 | GL-450V | LED | | 4-A | 1 |
| 62 | PU55825-1-3 | Cue Head | | 4-A | 1 |
| 63 | PU55826-1-2 | LED Board | | 4-A | 1 |
| 64 | DPSP3006Z | Screw | | 4-A | 1 |
| 65 | PU55827 | Photo Sensor | | 4-C | 1 |
| 66 | DPSP3006Z | Screw | | 4-C | 1 |
| 67 | PU56930 | Brush | | 5-C | 1 |
| 68 | LPSP3004Z | Screw | | 5-C | 1 |
| 69 | — | — | | — | — |
| 70 | — | — | | — | — |
| 71 | PQ40268 | Guide Flange | for Take-up | 3-C | 1 |
| 72 | PU56455 | Loading Sensor Board | | 4-C | 1 |
| 73 | QRD162J-821 | Carbon Resistor | | 4-C | 1 |
| 74 | PQ40969-1-2 | Guide Pole Cap | | 2-C | 1 |
| 75 | PU54557-1-3 | Shield Cap | for ㊴ A/CTL Head Ass'y | 1-D | 1 |
| 76 | PQ40767-1-4 | Bracket | | 1-D | 1 |
| 77 | HPSP1725N | Screw | | 1-C | 1 |
| 78 | — | — | | — | — |
| 79 | PU49483-2 | Commutator | for ① Drum Ass'y | 2-B | 1 |

## 5.2.5 Mechanism assembly (2)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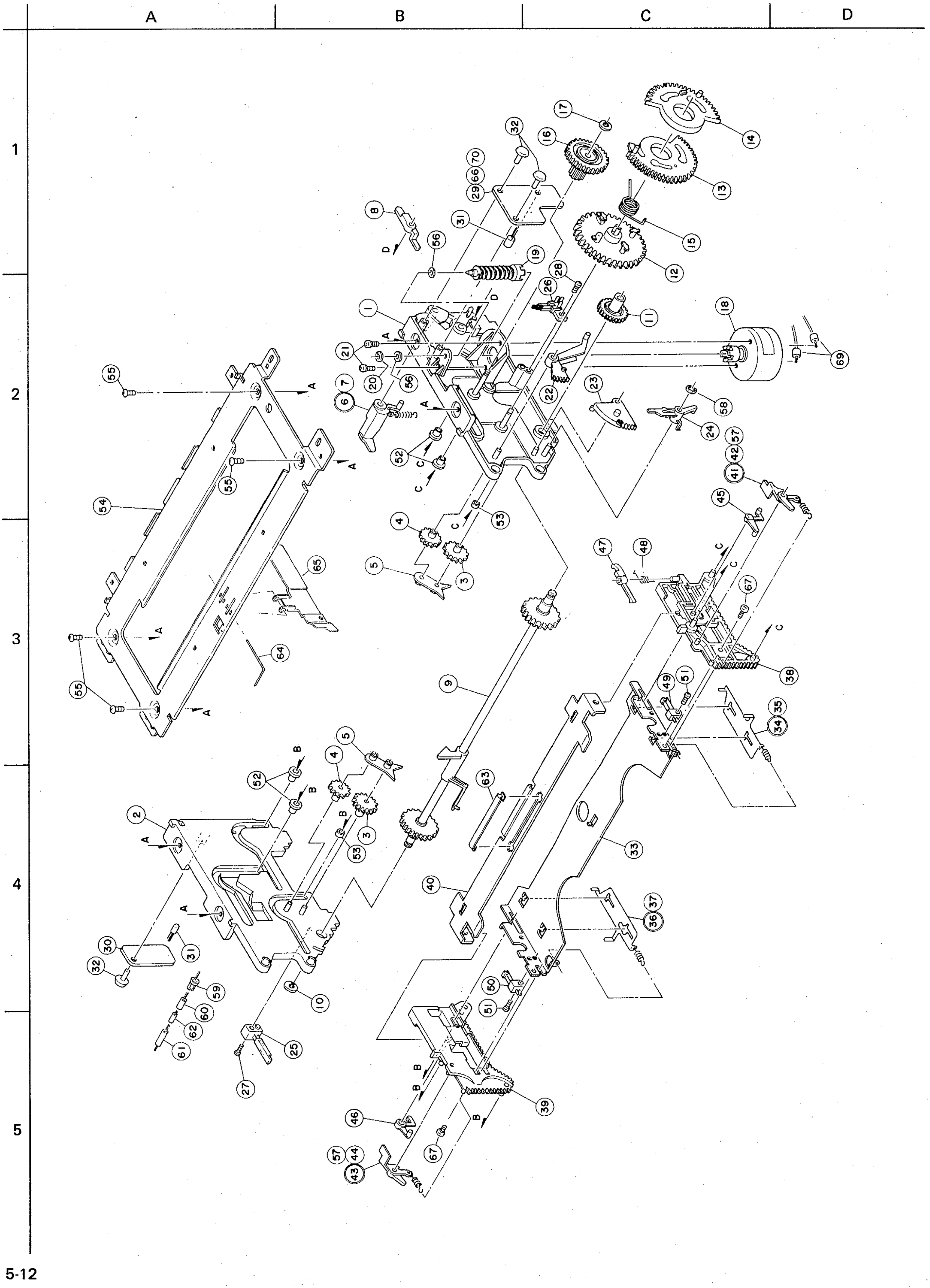
– Mechanism assembly (2) list –

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| 1 | PQ10032A-5 | Main-deck Ass'y | Inc. ② | 4-C | 1 |
| 2 | PQM30001-127 | Spring | | 3-B | 1 |
| 3 | PQ30130A | Slide Plate Ass'y | | 2-B | 1 |
| 4 | PQM30017-8 | Slit Washer | | 2-B | 2 |
| 5 | PUS36689D | Drive Gear Bracket Ass'y | Incl. ⑥ – ⑬ and (75) | 1-C | 1 |
| 6 | PQM30001-129 | Spring | | 2-C | 1 |
| 7 | " -130 | " | | 3-D | 1 |
| ⚠ 8 | PQ40244A-2 | Motor Ass'y (Mode Control) | | 2-C | 1 |
| 9 | PU56609-1-1 | Motor Board | | 2-C | 1 |
| 10 | PU49215-103 | Cap. Housing | | 2-C | 1 |
| 11 | QEN61HM-105 | NP Electrolytic Capacitor | C1 | 2-C | 1 |
| 12 | SPSP3003Z | Screw | | 2-D | 2 |
| 13 | PQM30003-14 | Belt (Loading) | | 2-D | 1 |
| 14 | SDSP2608Z | Screw | | 1-C | 3 |
| 15 | PQ40246A | Lever Ass'y | | 2-C | 1 |
| 16 | PQM30005-30 | Collar | | 2-C | 1 |
| 17 | REE4000 | E-Ring | | 2-B | 1 |
| 18 | PQ40250B | Cam Arm Ass'y | | 2-C | 1 |
| 19 | PQM30017-12 | Slit Washer | | 2-C | 1 |
| 20 | PQ40252A-1 | Pinch Roller Arm Ass'y | | 1-C | 1 |
| 21 | PQM30017-12 | Slit Washer | | 1-C | 1 |
| 22 | " -8 | " | | 1-C | 1 |
| 23 | PQ40259A | Tension Arm Ass'y | | 1-A | 1 |
| 24 | Q03093-829 | Washer | | 2-A | 1 |
| 25 | PQM30017 | Slit Washer | | 3-A | 1 |
| 26 | PQM30001-131 | Spring | | 4-B | 1 |
| 27 | PQ40262B-1 | Tension Band Ass'y | | 1-A | 1 |
| 28 | DPSP3006Z | Screw | | 1-A | 1 |
| 29 | PQ40274A | Loading Brake Ass'y (SUP) | Incl. ㉚ | 1-B | 1 |
| 30 | PQM30001-171 | Spring | | 1-B | 1 |
| 31 | PQM30017-12 | Slit Washer | | 1-B | 2 |
| 32 | PQ40276A-2 | Loading Brake Ass'y (TU) | Incl. ㉝ | 2-B | 1 |
| 33 | PQM30001-171 | Spring | | 1-B | 1 |
| 34 | PQ40279A-1 | Search Brake Ass'y | Incl. ㉟ | 1-B | 1 |
| 35 | PQM30001-164 | Spring | | 2-B | 1 |
| 36 | PQM30017-12 | Slit Washer | | 1-B | 1 |
| 37 | PQ40282A | Gear Lever Ass'y (TU) | | 3-A | 1 |
| 38 | PQ40284-1-2 | Gear Lever (SUP) | | 2-A | 1 |
| 39 | PQ41162 | Spring | | 2-A | 1 |
| 40 | PQM30017-13 | Slit Washer | | 2-A | 1 |
| 41 | PU55820-1-2 | Reel Disk (SUP) | | 1-B | 1 |
| 42 | PU55821-1-2 | " (TU) | | 2-B | 1 |
| 43 | Q03093-828 | Washer | | 2-B | 4 |
| 44 | PQM30017-5 | Slit Washer | | 1-B, 2-B | 2 |
| 45 | PQ40285A | Main Brake Ass'y (TU) | Incl. ㊻ and ㊼ | 4-B | 1 |
| 46 | PQM30001-135 | Spring | | 4-B | 1 |
| 47 | " -136 | " | | 4-B | 1 |
| 48 | PQ40288A | Main Brake Ass'y (SUP) | Incl. ㊾ and ㊿ | 4-A | 1 |
| 49 | PQM30001-135 | Spring | | 4-A | 1 |
| 50 | " -136 | " | | 4-A | 1 |
| 51 | PQM30017-12 | Slit Washer | | 4-A, B | 2 |
| 52 | PQ30133 | Main Brake Slider | | 4-A | 1 |
| 53 | PQM30017-8 | Slit Washer | | 4-A, B | 2 |
| 54 | PQM30001-137 | Spring | | 5-A | 1 |
| 55 | PQ40291 | Push Plate | | 4-C | 1 |

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| 56 | PQM30017-8 | Slit Washer | | 4-B, C | 2 |
| 57 | PQ40292A | Cancel Lever Ass'y (2) | | 4-A | 1 |
| 58 | PQM30017-5 | Slit Washer | | 4-A | 1 |
| 59 | PU55822A-3 | Clutch Mechanism Ass'y | Incl. (60) and (61) | 5-A | 1 |
| 60 | PQM30001-140 | Spring | | 5-A | 1 |
| 61 | " -139 | " | | 4-A | 1 |
| 62 | SPSP3006Z | Screw | | 5-A | 3 |
| 63 | PQ40437A-3 | Motor Brake Ass'y (Capstan) | Incl. (64) | 4-C | 1 |
| 64 | PQM30001-138 | Spring | | 4-C | 1 |
| 65 | PQM30017-12 | Slit Washer | | 4-C | 1 |
| 66 | PQ40298 | Sensor Holder (SUP) | | 4-B | 1 |
| 67 | PU55823 | Sensor Board (SUP) | | 4-B | 1 |
| 68 | PQ40296 | Sensor Holder (TU) | | 4-B | 1 |
| 69 | PU55824 | Sensor Board (TU) | | 4-B | 1 |
| 70 | PU55830 | Hall Element | | 4-B | 2 |
| 71 | SPST3008Z | Screw | | 4-A, 5-B | 2 |
| ⚠ 72 | PU55829V | Capstan Motor Ass'y | | 5-C | 1 |
| 73 | SDSP2603Z | Screw | | 3-B | 3 |
| 74 | PQM30003-10 | Belt (Reel) | | 5-C | 1 |
| 75 | QCF11HP-223 | Ceramic Capaciter | C2, 3 | 2-C | 2 |
| 76 | PQM30017-8 | Slit Washer | for ㉗ Tension Band Ass'y | 1-B | 1 |

### 5.2.6 Cassette housing assembly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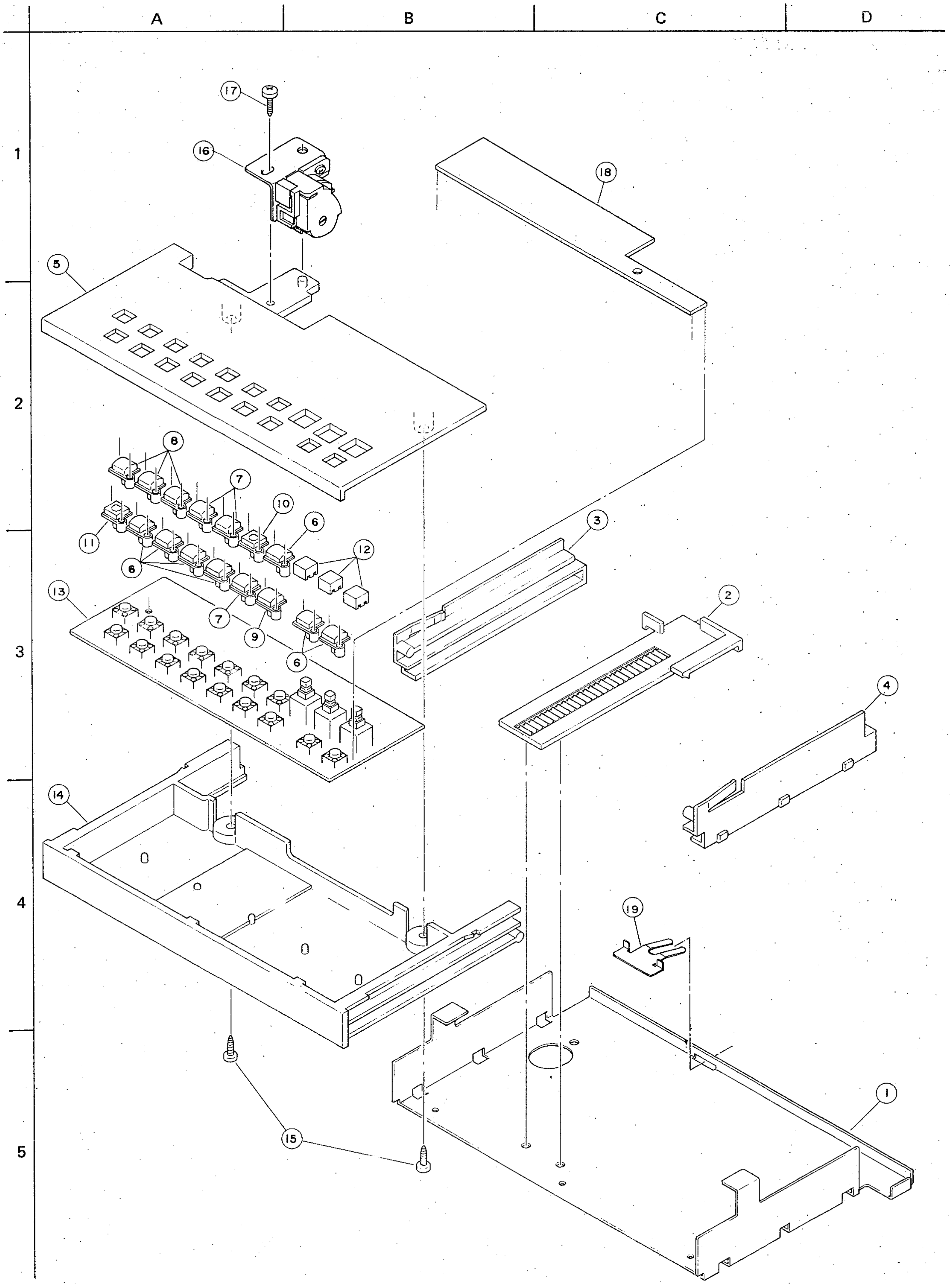
**— Cassette housing assembly list —**

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| | PUS26805H | Cassette Housing Ass'y | Incl. ① – (70) | — | — |
| 1 | PQ30033D | R. Guide Stay Ass'y | | 2-B | 1 |
| 2 | PQ30276B | L. Guide Stay Ass'y | | 4-A | 1 |
| 3 | PQ40059 | Gear (1) | | 3-B, 4-B | 2 |
| 4 | PQ40060 | ″ (2) | | 3-B | 2 |
| 5 | PQ40061 | Double Cap | | 3-B | 2 |
| 6 | PQ40102A | Door Guide Ass'y | Incl. ⑦ | 2-B | 1 |
| 7 | PUM30001-111 | Spring | | 2-B | 1 |
| 8 | PQ40063 | Guide Lever | | 1-B | 1 |
| 9 | PQ40103A | Connect Gear Ass'y | | 3-B | 1 |
| 10 | PUM30017-11 | Slit Washer | | 4-B | 1 |
| 11 | PQ40065 | Cam Gear (2) | | 2-C | 1 |
| 12 | PQ30028 | ″ (1) | | 2-C | 1 |
| 13 | PQ40066 | L. Slide Gear | | 1-C | 1 |
| 14 | PQ40067 | UL. Slide Gear | | 1-C | 1 |
| 15 | PQ40068-2 | Limiter Spring | | 1-C | 1 |
| 16 | PQ40484 | Worm Wheel | | 1-C | 1 |
| 17 | PUM30017-4 | Slit Washer | | 1-C | 1 |
| ⚠ 18 | PQ40090A | Cassette Motor Ass'y | | 2-C | 1 |
| 19 | PQ40091B | Worm Ass'y | | 1-C | 1 |
| 20 | PUM30017 | Slit Washer | | 2-B | 1 |
| 21 | LPSP2605Z | Screw | | 2-B | 2 |
| 22 | PQ40074 | U. Door Opener | | 2-C | 1 |
| 23 | PQ40075-1-5 | L. Door Opener | | 2-C | 1 |
| 24 | PQ40076-1-5 | Hold Lever | | 2-C | 1 |
| 25 | PU51259-3 | Leaf Switch | REC SAFETY | 5-B | 1 |
| 26 | PU55377-2 | End Switch | HOUSING UP/DOWN DET. | 2-C | 1 |
| 27 | SPSP2010Z | Screw | | 5-A | 1 |
| 28 | SBSE2610Z | Tapping Screw | | 1-C | 1 |
| 29 | PU56460-1-2 | Cassette Housing Board | | 1-B | 1 |
| 30 | PU55111 | End Sensor Board | | 4-A | 1 |
| 31 | PT-352V | Photo Transistor | or PN202SR | 1-B, 4-A | 2 |
| 32 | PU48973-3 | Stopper | | 1-B, 4-A | 3 |
| 33 | PQ30031-1-2 | Cassette Holder | | 4-C | 1 |
| 34 | PQ40106B-1 | R. Slide Plate Ass'y | Incl. ㉟ | 3-D | 1 |
| 35 | PUM30001-113 | Spring | | 3-D | 1 |
| 36 | PQ40107B-1 | L. Slide Plate Ass'y | Incl. ㊲ | 4-C | 1 |
| 37 | PUM30001-113 | Spring | | 4-C | 1 |
| 38 | PQ10009-1-3 | R. Bracket | | 3-D | 1 |
| 39 | PQ10009-2-3 | L. Bracket | | 5-C | 1 |
| 40 | PQ30208 | Reinforcement | | 4-B | 1 |
| 41 | PQ40108B | R. Lock Lever Ass'y | Incl. ㊷ and (57) | 2-C | 1 |
| 42 | PUM30001-110 | Spring | | 2-C | 1 |
| 43 | PQ40109B | L. Lock Lever Ass'y | Incl. ㊹ and (57) | 5-B | 1 |
| 44 | PUM30001-110 | Spring | | 5-B | 1 |
| 45 | PQ40081A | R. Switch Lever Ass'y | | 2-C | 1 |
| 46 | PQ40081B | L. Switch Lever Ass'y | | 5-B | 1 |
| 47 | PQ40083 | Lid Opener | | 3-C | 1 |
| 48 | PQ40084-1-2 | Spring | | 3-C | 1 |
| 49 | PU55378 | R. Insert Switch | CASS. IN DET. | 3-C | 1 |
| 50 | PU55378-2 | L. Insert Switch | ″ | 4-B | 1 |
| 51 | SPSP1704Z | Washer | | 3-C, 5-B | 2 |
| 52 | PQ40086 | Roller | | 2-B, 4-A | 4 |
| 53 | PQ40087 | Mini Roller | | 3-B, 4-B | 2 |
| 54 | PQ20043 | Roof Plate | | 2-A | 1 |
| 55 | SBSE2608Z | Screw | | 2-A, 3-A | 4 |
| 56 | Q03093-838 | Spacer | | 1-B, 2-B | 2 |
| 57 | PQM30019-10 | Pad | | 2-C, 5-B | 2 |
| 58 | REE2500X | E-Ring | | 2-C | 1 |
| 59 | PQ40299 | Wire Cap | | 4-A | 1 |
| 60 | QXT629H-020 | UL Tube | | 5-A | 1 |
| 61 | QXT329H-035 | ″ | | 5-A | 1 |
| 62 | QXTF253-020 | ″ | | 5-A | 1 |
| 63 | PQ40479 | Guard | | 4-B | 1 |
| 64 | PQ40440 | Rod | | 3-B | 1 |
| 65 | PQ40478-1-3 | Upper Door Stopper | | 3-B | 1 |
| 66 | PU49215-109 | Cap Housing | | 1-B | 1 |
| 67 | SPSP2003Z | Screw | | 3-C, 5-B | 2 |
| 68 | — | — | | — | — |
| 69 | PU45811 | Ferrite Beads | | 2-D | 2 |
| 70 | QCF31HP-223 | C. Capacitor | C2, 3 | 1-B | 2 |

## 5.2.7 Program assembly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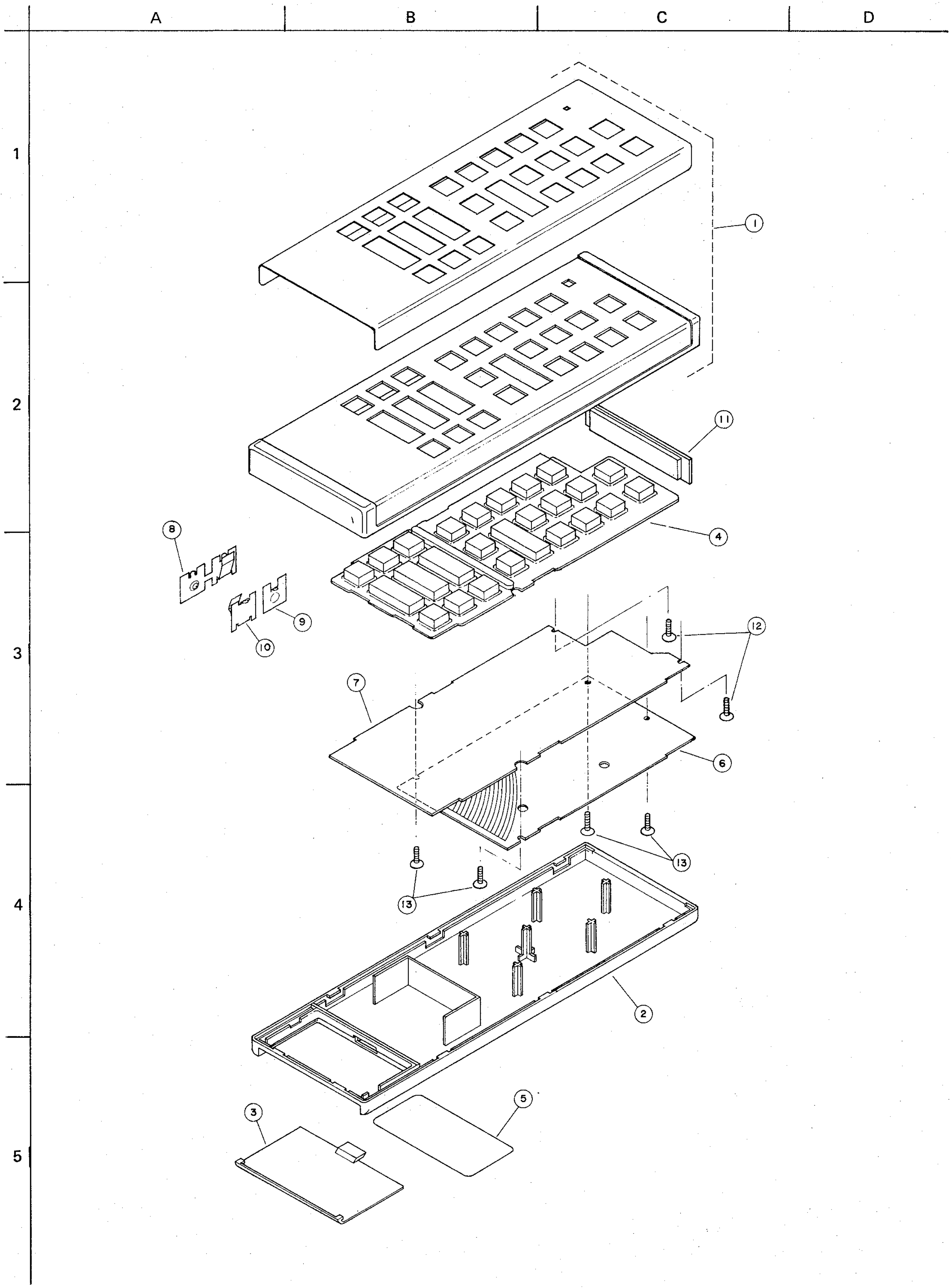
– Program assembly list –

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| 1 | PQ20035-1-1 | Drawer Cover | | 5-D | 1 |
| 2 | PQ40383 | Rack | | 3-C | 1 |
| 3 | PQ30177-1-2 | Guide Rail (L) | | 2-C | 1 |
| 4 | PQ30178-1-2 | 〃 (R) | | 3-D | 1 |
| 5 | PQ20042-1-6 | Upper Cover | | 1-A | 1 |
| 6 | PQ40380-1-1 | Button | | 2-B, 3-A, B | 7 |
| 7 | 〃 -2-1 | 〃 | | 2-A, 3-A | 3 |
| 8 | 〃 -3-1 | 〃 | | 2-A | 3 |
| 9 | 〃 -4-1 | 〃 | | 3-A | 1 |
| 10 | PQ40381-1-1 | 〃 | | 2-B | 1 |
| 11 | 〃 -2-1 | 〃 | | 3-A | 1 |
| 12 | PQ40392 | 〃 | | 3-B | 3 |
| 13 | — | Program Board Assembly | See Section 6.2.14. | 3-A | 1 |
| 14 | PQ20030-2-4 | Lower Cover | | 4-A | 1 |
| 15 | SDSF3010Z | Tapping Screw | | 5-B | 2 |
| 16 | PU56233-1-1 | Drive Unit Assembly | | 1-A | 1 |
| 17 | SDSF3010Z | Tapping Screw | | 1-A | 1 |
| 18 | PQ40971 | Spacer | | 1-C | 1 |
| 19 | PQ41074 | Earth Plate | | 4-C | 1 |

### 5.2.8 Remote control unit assembly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– Remote control unit assembly list –

| Symbol No. | Part No. | Part Name | Description | Symbol No. Position | Q'ty |
|---|---|---|---|---|---|
| | PU10883A | Remote Control Unit | Incl.①– ⑬ | – | – |
| 1 | PU34708A | Top Panel Assembly | | 1-C | 1 |
| 2 | PU34735 | Bottom Case | | 4-C | 1 |
| 3 | PU34736 | Battery Cap | | 5-A | 1 |
| 4 | PU34703 | Button | | 3-C | 1 |
| 5 | PU34814-2 | Battery Label | | 5-B | 1 |
| 6 | – | Circuit Board Assembly | See Section 6.2.17. | 3-C | 1 |
| 7 | PU10883-001 | Operation Board | | 3-B | 1 |
| 8 | PU10882-003 | Battery Terminal (A) | | 2-A | 1 |
| 9 | 〃 -004 | 〃 (B) | | 3-B | 1 |
| 10 | 〃 -005 | 〃 (C) | | 3-A | 1 |
| 11 | 〃 -006 | Filter | | 2-C | 1 |
| 12 | SBSB2005Z | Tapping Screw | | 3-C | 2 |
| 13 | SDSF2006N | 〃 | | 4-B, C | 4 |

# SECTION 6
# ELECTRICAL PARTS LIST

## SAFETY PRECAUTION

**Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.**

## ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS – All resistance values are in ohms (Ω).

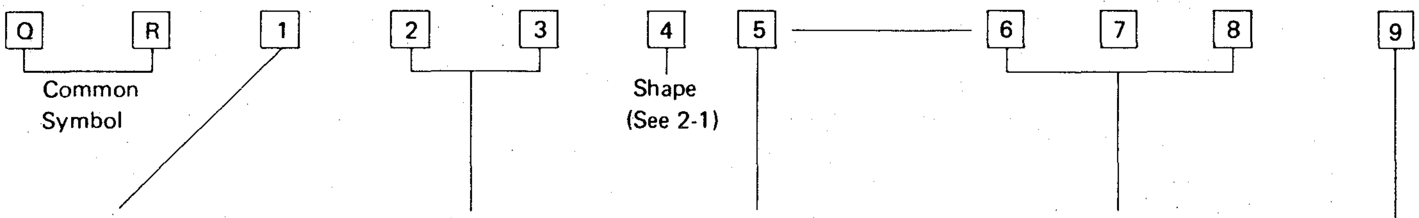
K : 1 000
M : 1 000 000
CR : Carbon Resistor
Comp. R: Composition Resistor
WR : Wire Wound Resistor
OMR : Oxide Metal Film Resistor
VR : Variable Resistor (Potentiometer)
MFR : Metal Film Resistor
FR : Fusible Resistor
PMR : Precision Metal Film Resistor

CAPACITORS – All capacitance values are in μF, unless otherwise indicated.

P : μμF
C Cap : Ceramic Capacitor
E Cap : Electrolytic Capacitor
FM Cap : Film Mica Capacitor
MM Cap : Metalized Mylar Capacitor
MP Cap : Metalized Paper Capacitor
MY Cap : Mylar Capacitor
NP Cap : Non-polar Capacitor
PC Cap : Polycarbonate Capacitor
PP Cap : Poly Pro Capacitor
PS Cap : Polystyrol Capacitor
T Cap : Tantalum Capacitor
TR Cap : Trimmer Capacitor
LL Cap : Low Leak Current Electrolytic Capacitor
TF Cap : Thin Film Capacitor

## 6.1 STANDARD PART NUMBER CODING

### 6.1.1 Fixed Resistor Coding



Type of resistor

| | |
|---|---|
| C | Composition Resistor |
| D | Carbon Resistor |
| F | Unflammable Resistor |
| G | Oxide Metal Film Resistor |
| M | Metal Plate Resistor |
| X | Metal Film Resistor |
| W | Wire Wound Resistor |
| Y | Wire Wound Resistor |
| V | Metal Film Resistor, High Stability |
| Z | Special Resistor |
| S | Chip Resistor |

Rated Wattage

| Symbol | Rated wattage |
|---|---|
| 16 | 1/6 (W) |
| 18 | 1/8 " |
| 14 | 1/4 " |
| 12 | 1/2 " |
| 01 | 1 " |
| 02 | 2 " |
| 03 | 3 " |
| 04 | 4 " |
| 05 | 5 " |
| 06 | 6 " |
| 07 | 7 " |
| 75 | 7.5 " |
| 08 | 8 " |
| 10 | 10 " |
| 15 | 15 " |
| 20 | 20 " |
| 30 | 30 " |

Tolerance

| Symbol | Tolerance |
|---|---|
| F | ±1 % |
| G | ±2 % |
| J | ±5 % |
| K | ±10 % |
| M | ±20 % |

Values

| —Example — | | |
|---|---|---|
| R47 | .......................... | 0.47 Ω |
| 4R7 | .......................... | 4.7 Ω |
| 470 | .....47 x $10^0$ ..... | 47 Ω |
| 471 | .....47 x $10^1$ ..... | 470Ω |
| 472 | .....47 x $10^2$ ..... | 4.7 KΩ |
| 473 | .....47 x $10^3$ ..... | 47 KΩ |
| 474 | .....47 x $10^4$ ..... | 470 KΩ |
| 475 | .....47 x $10^5$ ..... | 4.7 MΩ |
| 10R2 | .......................... | 10.2 Ω |
| 1430 | ... 143 x $10^0$ ..... | 143 Ω |
| 1581 | ... 158 x $10^1$ ..... | 1.58 KΩ |

Size

| Symbol | Size |
|---|---|
| A | Small Size |
| S | Small Size |

**2-1 Shape of resistor** ( ■ : Flame retardant resistor)

| Sort | C | D | G | F | M | W | X | Y | V |
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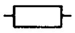
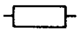
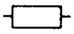
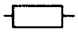
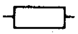
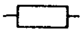
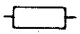
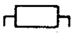
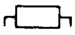
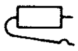
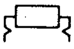
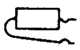
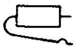
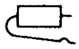
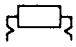
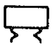
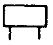
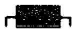
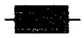
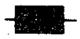
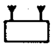
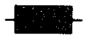
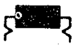
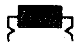
| 1 |  |  |  |  | |  | |  |  |
| 2 |  | | | | | | | |  |
| 3 | |  |  | | |  | | |  |
| 4 | |  |  | |  | | | | |
| 5 | | | | |  | L type |  | | |
| 6 | |  |  |  | | Resin Covered |  | | |
| 7 | | |  | | | Enameled |  | | |
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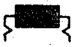
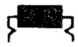
| 9 | | |  | | | |  | | |

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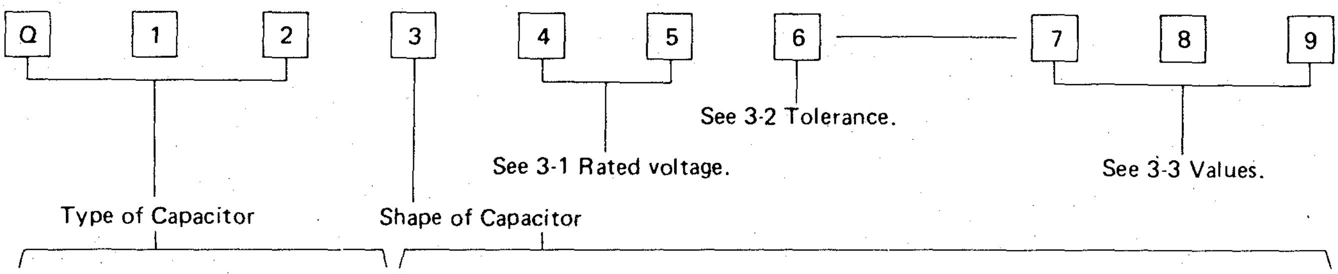
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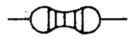
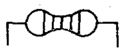
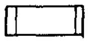
8
9
See 3-2 Tolerance.
See 3-1 Rated voltage.
See 3-3 Values.
Type of Capacitor
Shape of Capacitor

**Ceramic Capacitors**

| Symbol | Type of Capacitor | Disk Lead | Kink Lead |  |  |  |
|---|---|---|---|---|---|---|
| QCC | Ceramic | | | 4 | 5 | |
| QCF | " | 1 | 3 | | | |
| QCS | " | 1 | 3 | | | |
| QCT | Temperature compensation | | | | | |
| QCX | Special | | | 1 | 3 | |
| QCY | Ceramic | 1, 4 | 3 | | | 8 |
| QCZ | Special | | | | | |

**Electrolytic Capacitors**

| Symbol | Type of Capacitor | Tubular | Mono-direction | Anti-stress | Forming | Snap-in |
|---|---|---|---|---|---|---|
| QEA | Characteristic A | 2 | 4 | | | |
| QEB | Low Leakage | | 4 | 5 | 6 | |
| QED | Characteristic D | 2 | 4 | | | |
| QEE | Tantalum | | 4 | 5 | | |
| QEE | " (small type) | | 8 | | | |
| QEK | Characteristic W (subminiature type) | | 4 | 5 | | |
| QEL | Characteristic L | | | | | 7 |
| QEN | Non-polar | 2 | 4 | 5 | 6 | |
| QET | Characteristic W (small type) | 2 | 4 | 5 | 6 | |
| QEW | Characterisitc W | 2 | 4 | 5 | 6 | 7 |
| QEZ | Special | | | | | |

**Paper Film Capacitors**

| Symbol | Type of Capacitor | Tubular | Normal | | Flame retardant | |
|---|---|---|---|---|---|---|
| | | | Mono-direction | Kink Lead | Mono-direction | Kink Lead |
| QFF | Film mica | | 4 | | | |
| QFH | Metalized mylar | 2 | 4 | 3 | 5 | 6 |
| QFM | Mylar | 2 | 4 | 3, 7 | 5 | 6 |
| QFN | " (small type) | | 4 | | | |
| QFP | Polypropylene | | 4 | 3 | | |
| QFS | Polystyrole | 2 | 4 | 3 | | |
| QFZ | Special | | | | | |

### 3-1 Rated voltage (V)

| First letter \ 2nd letter | A | B | C | D | E | F | G | H | J | K | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | 3.15 | | | 6.3 | | | | |
| 1 | 10 | | 16 | 20 | 25 | | 40 | 50 | 63 | | 35 | | |
| 2 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | | 350 | 450 | 600 |
| 3 | 1000 | 1250 | | 2000 | | | | 5000 | | | | | |

### 3-2 Tolerance

| Symbol | F | G | J | K | M | N | Z | P | A | H | R |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (%) | ± 1 | ± 2 | ± 5 | ± 10 | ± 20 | ± 30 | + 80<br>− 20 | + 100<br>− 0 | + 100<br>− 10 | + 50<br>− 10 | + 30<br>− 10 |

### 3-3 Values

– Example – Values are in picofarads.

101 ..... $10 \times 10^1$ ..... 100 pF

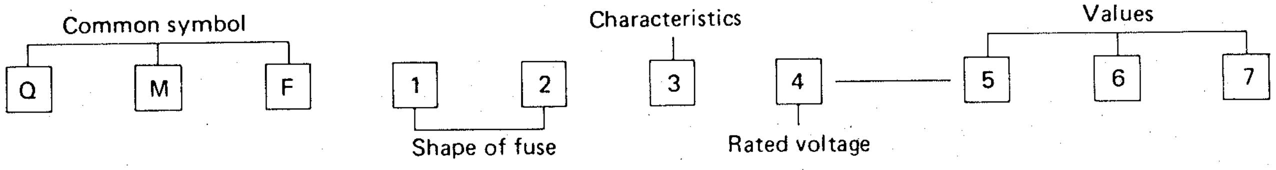
102 ..... $10 \times 10^2$ ..... 1,000 pF = 0.001 μF

103 ..... $10 \times 10^3$ ..... 10,000 pF = 0.01 μF

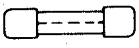
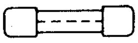
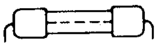
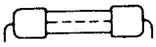
104 ..... $10 \times 10^4$ ..... 100,000 pF = 0.1 μF

5R0 ..... 5.0 ..... 5 pF

### 6.1.3 Fuse Coding



**Shape of Fuse** (first and second digit)

| Symbol No. | Shape | Remarks |
|---|---|---|
| 51 | | ϕ 5.2 x 20 mm |
| 60 |  | ϕ 6.4 x 30 mm |
| 61 |  | ϕ 6.35 x 31.8 mm |
| 63 |  | With 60 Lead Wire |
| 66 |  | With 61 Lead Wire |

**Rated Voltage** (fourth digit)

| Symbol No. | Rated Voltage | |
|---|---|---|
| 1 | AC 125 V | |
| 2 | AC 250 V | |
| 3 | 100 mA<br>~<br>1 A | AC 250 V |
| | 1.25 A<br>~<br>6.3 A | AC125 V |

**Value** (fifth – seventh digit)

– Example –

| | |
|---|---|
| R10 | 100 mA |
| R125 | 125 mA |
| 1R0 | 1.0 A |
| 1R2 | 1.2 A |
| 1R25 | 1.25 A |
| 100 | 10 A |

**Characteristics** (third digit)

| Symbol No. | Fusing Current | Fusing Time | Remarks |
|---|---|---|---|
| S | 160% | Within 1 hr. | Anti-rush Type |
| | 200% | ″ 2 min. | |
| | 700% – 2000% | ″ 0.01 sec. | |
| R | 160% | ″ 1 hr. | Regular Fusible Type |
| | 200% | ″ 2 min. | |
| M | 135% | ″ 1 hr. | Regular Fusible Type (for UL) |
| | 200% | ″ 2 min. | |
| U | 135% | ″ 1 hr. | Anti-rush Type (for UL) |
| | 200% | ″ 2 min. | |
| | 800% – 2000% | ″ 0.01 sec. | |
| A | 210% | ″ 2 min. | Anti-rush Type (for Europe) |
| | 275% | 0.5 – 10 sec. | |
| | 400% | 0.15 – 2 sec. | |
| | 1000% | 0.02 – 0.3 sec. | |
| B | 210% | Within 30 min. | Regular Fusible Type<br>(for SEMKO, Europe) |
| | 275% | 0.05 – 2 sec. | |
| | 400% | 0.01 – 0.3 sec. | |
| C | 135% | Within lhr. | Anti-rush Type (for UL, Japan) |
| | 200% | ″ 2 min. | |

## 6.2 ELECTRICAL PARTS LIST BY ASSEMBLIES

### 6.2.1 Power Transformer Ass'y 0 1

. . . . . . . . . . . . . . . . . . . . . . . . . PU56332

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R 1 | QRC121K-225E | Resistor | |
| ⚠C 1 | QFH72BM-223N | MM Cap | |
| | PU34646 | P. Trans Board | |
| ⚠T 1 | A39475G | Line Filter | |
| ⚠ | SBSB3008Z | Screw | |
| | PU56245 | Power Trans | |
| | PU34657 | Insulator | |
| ⚠ | A74316 | Tab | |
| | PU51721 | Test Pin | |
| ⚠ | PU51212 | Fuse Clip | |
| ⚠ | QMP1450-200A | Power Cord | |
| ⚠ | PU51919 | AC Outlet Cover | |
| ⚠ | PU43192-4 | Binder | |
| ⚠ | QMC0242-001 | AC Outlet | |
| ⚠ | PQ40414-2 | Power Bracket | |

[Not included in Power Transformer ass'y (PU56332)]

| | | | |
|---|---|---|---|
| ⚠F 1 | QMF51U1-1R6 | Fuse | |
| ⚠F 2 | 〃 -4R0 | 〃 | |

### 6.2.2 Regulator Circuit Board Ass'y 0 2

. . . . . . . . . . . . . . . . . . . . . . . . . PU21777A-2

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | BA6122A | Integrated Circuit | |
| ⚠IC 2 | TA78009AP | 〃 | |
| ⚠Q 1 | 2SA1020Y | Transistor | |
| ⚠Q 2 | 2SC2562O | 〃 | |
| ⚠Q 3 | 2SA1012Y | 〃 | |
| Q 4 | 2SA1282AF | 〃 | |
| Q 5 | 〃 | 〃 | |
| ⚠Q 6 | 2SC2655O,Y | 〃 | |
| Q 7 | 〃 | 〃 | |
| Q 8 | 2SD637R,S | 〃 | |
| Q 9 | 2SB744Q | 〃 | |
| ⚠Q10 | 2SD880Y | 〃 | |
| ⚠D 1 | 4B4B42 | Diode Stack | |
| ⚠D 2 | 31DQ04 | Diode | |
| D 3 | 11E2 | 〃 | |
| D 4 | HZ12A-2 | Zener Diode | |
| D 5 | 11DQ04 | Diode | |
| D 6 | DAN-201 | Diode Array | |
| ⚠D 7 | 10E2 | Diode | |
| ⚠D 8 | 〃 | 〃 | |
| D 9 | HZ16-3 | Zener Diode | |
| ⚠D10 | 11E2 | Diode | |
| D11 | 〃 | 〃 | |
| D12 | DAP-201 | Diode Array | |
| D13 | 11E2 | Diode | |
| D14 | 〃 | 〃 | |
| D15 | HZ15-2 | 〃 | |
| D16 | 〃 | 〃 | |
| D17 | 11E2 | Diode | |
| D18 | 〃 | 〃 | |
| D19 | 〃 | 〃 | |
| ⚠R 1 | QRD181J-823 | CR | |
| ⚠R 2 | 〃 -331 | 〃 | |
| R 3 | QRD122J-222 | 〃 | |
| ⚠R 4 | QRD181J-221 | 〃 | |
| ⚠R 5 | 〃 -822 | 〃 | |
| ⚠R 6 | 〃 -222 | 〃 | |
| ⚠R 7 | QRG019J-331 | OMR | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| ⚠R 8 | QRG019J-102 | OMR | |
| R 9 | QRD181J-393 | CR | |
| R10 | " -123 | " | |
| R11 | " -103 | " | |
| R12 | PU55509-472 | VR | 12.5 V ADJ. |
| R13 | QRD181J-272 | CR | |
| R14 | " -152 | " | |
| R15 | " -331 | " | |
| R16 | " -123 | " | |
| R17 | PU55509-103 | VR | 5.5 V ADJ. |
| R18 | QRD181J-123 | CR | |
| R19 | " -222 | " | |
| R20 | " -471 | " | |
| ⚠R21 | QRG019J-182 | OMR | |
| R22 | – | – | |
| R23 | QRD181J-103 | CR | |
| R24 | " -122 | " | |
| R25 | " -392 | " | |
| R26 | " -103 | " | |
| ⚠R27 | QRG019J-222 | OMR | |
| ⚠C 1 | QCF32HP-103 | C Cap | |
| C 2 | – | – | |
| C 3 | QCF31HP-103 | C Cap | |
| ⚠C 4 | " -103 | " | |
| ⚠C 5 | " -103 | " | |
| ⚠C 6 | " -103 | " | |
| ⚠C 7 | " -103 | " | |
| ⚠C 8 | " -103 | " | |
| ⚠C 9 | " -103 | " | |
| C10 | " -103 | " | |
| C11 | " -103 | " | |
| ⚠C12 | QEL71VR-338 | E Cap | |
| C13 | QET61HM-105 | " | |
| ⚠C14 | PU56986-2 | " | |
| ⚠C15 | " -2 | " | |
| C16 | QET61EM-476 | " | |
| C17 | " -476 | " | |
| C18 | " -226 | " | |
| C19 | QFN31HJ-102 | MY Cap | |
| C20 | QET61EM-475 | E Cap | |
| C21 | QCF31HP-472 | C Cap | |
| C22 | " -472 | " | |
| C23 | QET61EM-227 | E Cap | |
| C24 | ECEA1AF101E | " | |
| C25 | QCF31HP-222 | C Cap | |
| C26 | ECEA1AF101E | E Cap | |
| ⚠C27 | QEL71VR-228 | " | |
| C28 | QET61EM-476 | " | |
| C29 | QET61JM-107 | " | |
| C30 | " -107 | " | |
| C31 | " -107 | " | |
| C32 | QET61HM-226 | " | |
| C33 | QET61EM-107 | " | |
| C34 | QET40JM-227 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| ⚠L 1 | PU56182-331 | Choke Coil | |
| ⚠L 2 | PU56183-330 | " | |
| L 3 | PU56180-331 | " | |
| L 4 | PU56181-470 | " | |
| L 5 | " -330 | Peaking Coil | |
| L 6 | " -470 | Choke Coil | |
| CN 1 | PU49215-2 | Cap. Housing | CAMERA |
| CN 2 | – | – | |
| CN 3 | PU49215-104 | Cap. Housing | TU/IF |
| CN 4 | – | – | |
| CN 5 | PU49215-103 | Cap. Housing | VIDEO |
| CN 6 | " -110 | " | A/S/M |
| ⚠CN 7 | PU50597-4 | " | |
| TP | PU55774 | Test Pin | TP1, 5, 9 |
| ⚠K1 | PU56179 | Ferrite Beads | |
| ⚠K2 | " | " | |
| ⚠ | PU45375-3 | Spacer | |
| | PU41624-6 | Isolation Washer | |
| | A74017 | Tab | |
| ⚠ | PU34633 | Heat Sink | |
| | DPSP3006Z | Screw | |
| | SPSP3012Z | " | |
| | SPSP3008Z | " | |
| | PU52913-2 | Spacer | |
| ⚠ | PU51212 | Fuse Clip | |

[Not included in circuit board ass'y (PU21777A-2)]

| | | | |
|---|---|---|---|
| ⚠F 3 | QMF51U1-3R15 | Fuse | |
| F 4 | – | – | |
| ⚠F 5 | QMF51U1-R315 | Fuse | |
| ⚠F 6 | " -R80 | " | |

### 6.2.3 Video Circuit Board Ass'y [0][3] PU10862B-3

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| | [Y section] | | |
| IC 1 | 12VT14 | Integrated Circuit | |
| IC 2 | AN6308 | " | |
| IC 3 | AN6393 | " | |
| IC 4 | 5VT07 | " | |
| IC 5 | BA7021 | " | |
| IC 6 | AN6306 | " | |
| IC 7 | AN6328 | " | |
| IC 8 | AN6327 | " | |
| IC 9 | AN6392 | " | |
| IC10 | " | " | |
| IC11 | – | – | |
| IC12 | M51457P | Integrated Circuit | |
| Q 1 | 2SC2021Q | Transistor | |
| Q 2 | " | " | |
| Q 3 | DTC114F | D. Transistor | |
| Q 4 | 2SC2021Q | Transistor | |
| Q 5 | 2SB641R | " | |
| Q 6 | DTC114F | D. Transistor | |
| Q 7 | " | " | |
| Q 8 | 2SB641R | Transistor | |
| Q 9 | " | " | |
| Q10 | " | " | |
| Q11 | 2SC2021Q | " | |
| Q12 | – | – | |
| Q13 | – | – | |
| Q14 | 2SC2021Q | Transistor | |
| Q15 | – | – | |
| Q16 | 2SC2021Q | Transistor | |
| Q17 | 2SB641R | " | |
| Q18 | 2SC2021Q | " | |
| Q19 | 2SK381C | F.E.T. | |
| Q20 | 2SB641R | Transistor | |
| Q21 | DTC114F | D. Transistor | |
| Q22 | 2SC2021Q | Transistor | |
| Q23 | " | " | |
| Q24 | DTC114F | D. Transistor | |
| Q25 | " | " | |
| Q26 | 2SB643S | Transistor | |
| Q27 | DTC144WF | D. Transistor | |
| Q28 | 2SB643S | Transistor | |
| Q29 | DTA114F | D. Transistor | |
| Q30 | " | " | |
| Q31 | " | " | |
| Q32 | 2SB643S | Transistor | |
| Q33 | DTC144WF | D. Transistor | |
| Q34 | DTC124F | " | |
| Q35 | 2SC2021Q | Transistor | |
| Q36 | DTC114F | D. Transistor | |
| Q37 | 2SB641R | Transistor | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| Q38 | 2SC2021Q | Transistor | |
| Q39 | 2SB641R | " | |
| Q40 | 2SC2021Q | " | |
| Q41 | DTC114F | D. Transistor | |
| Q42 | DTA114F | " | |
| Q43 | DTC124F | " | |
| Q44 | DTA114F | " | |
| Q45 | DTC124F | " | |
| Q46 | 2SB643R,S | Transistor | |
| Q47 | 2SC2021R | " | |
| Q48 | " | " | |
| Q49 | 2SC2021R,S | " | |
| Q50 | DTC114F | D. Transistor | |
| Q51 | " | " | |
| Q52 | 2SA564Q,R | Transistor | |
| Q53 | 2SC829C | " | |
| Q54 | 2SC2655Y | " | |
| D 1 | – | – | |
| D 2 | RD3.3EB | Zener Diode | |
| D 3 | 1SS99 | Diode | |
| D 4 | 1SS133 | " | |
| D 5 | – | – | |
| D 6 | – | – | |
| D 7 | 1SS133 | Diode | |
| D 8 | – | – | |
| D 9 | – | – | |
| D10 | – | – | |
| D11 | – | – | |
| D12 | MA27T-A | " | |
| D13 | 1SS133 | " | |
| D14 | " | " | |
| D15 | " | " | |
| D16 | " | " | |
| D17 | – | – | |
| D18 | – | – | |
| D19 | 1SS133 | Diode | |
| D20 | " | " | |
| D21 | " | " | |
| D22 | " | " | |
| D23 | " | " | |
| D24 | " | " | |
| D25 | " | " | |
| D26 | " | " | |
| D27 | " | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| D28 | 1SS133 | Diode | |
| D29 | " | " | |
| D30 | " | " | |
| D31 | " | " | |
| D32 | " | " | |
| D33 | " | " | |
| D34 | 1SS99 | " | |
| D35 | " | " | |
| D36 | 1SS133 | " | |
| D37 | " | " | |
| D38 | – | – | |
| D39 | – | – | |
| D40 | 1SS133 | Diode | |
| D41 | " | " | |
| D42 | " | " | |
| D43 | " | " | |
| D44 | " | " | |
| D45 | " | " | |
| D46 | " | " | |
| D47 | " | " | |
| R 1 | QRD161J-103 | CR | |
| R 2 | " -102 | " | |
| R 3 | " -102 | " | |
| R 4 | " -152 | " | |
| R 5 | QVZ3517-222 | VR | RF EQ. |
| R 6 | QRD161J-122 | CR | |
| R 7 | " -681 | " | |
| R 8 | " -223 | " | |
| R 9 | " -102 | " | |
| R10 | " -122 | " | |
| R11 | " -102 | " | |
| R12 | " -222 | " | |
| R13 | – | – | |
| R14 | – | – | |
| R15 | – | – | |
| R16 | – | – | |
| R17 | QRD161J-392 | CR | |
| R18 | " -103 | " | |
| R19 | " -271 | " | |
| R20 | " -271 | " | |
| R21 | " -182 | " | |
| R22 | " -103 | " | |
| R23 | " -103 | " | |
| R24 | " -561 | " | |
| R25 | " -391 | " | |
| R26 | " -103 | " | |
| R27 | " -104 | " | |
| R28 | " -562 | " | |
| R29 | " -472 | " | |
| R30 | " -103 | " | |
| R31 | QVZ3517-103 | VR | D. CLIP |
| R32 | QRD161J-103 | CR | |
| R33 | " -100 | " | |
| R34 | " -103 | " | |
| R35 | QVZ3517-103 | VR | CARRIER |
| R36 | " -682 | " | |
| R37 | QRD161J-272 | CR | |
| R38 | " -682 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R39 | QRD161J-182 | CR | |
| R40 | " -222 | " | |
| R41 | – | – | |
| R42 | QRD161J-222 | CR | |
| R43 | " -181 | " | |
| R44 | " -272 | " | |
| R45 | " -152 | " | |
| R46 | " -562 | " | |
| R47 | " -222 | " | |
| R48 | " -221 | " | |
| R49 | " -102 | " | |
| R50 | " -152 | " | |
| R51 | " -822 | " | |
| R52 | QVZ3517-103 | VR | W. CLIP |
| R53 | QRD161J-682 | CR | |
| R54 | " -563 | " | |
| R55 | QRD162J-332 | " | |
| R56 | QVZ3517-103 | VR | E-E LEVEL |
| R57 | – | – | |
| R58 | QRD161J-224 | CR | |
| R59 | " -331 | " | |
| R60 | " -102 | " | |
| R61 | " -392 | " | |
| R62 | " -122 | " | |
| R63 | – | – | |
| R64 | QRD161J-393 | CR | |
| R65 | " -223 | " | |
| R66 | " -821 | " | |
| R67 | " -103 | " | |
| R68 | " -122 | " | |
| R69 | " -122 | " | |
| R70 | " -101 | " | |
| R71 | QVZ3517-102 | VR | NR. ADJ. |
| R72 | QRD161J-560 | CR | |
| R73 | " -680 | " | |
| R74 | – | – | |
| R75 | QRD161J-471 | CR | |
| R76 | QVZ3517-222 | VR | PB Y LEVEL |
| R77 | QRD161J-182 | CR | |
| R78 | " -821 | " | |
| R79 | " -102 | " | |
| R80 | " -182 | " | |
| R81 | " -334 | " | |
| R82 | QRD162J-272 | " | |
| R83 | QRD161J-151 | " | |
| R84 | " -821 | " | |
| R85 | " -222 | " | |
| R86 | " -183 | " | |
| R87 | " -564 | " | |
| R88 | " -102 | " | |
| R89 | " -102 | " | |
| R90 | " -103 | " | |
| R91 | " -122 | " | |
| R92 | " -684 | " | |
| R93 | " -102 | " | |
| R94 | " -564 | " | |
| R95 | " -100 | " | |
| R96 | " -222 | " | |
| R97 | " -681 | " | |
| R98 | " -561 | " | |
| R99 | – | – | |
| R100 | QRD161J-471 | CR | |
| R101 | " -223 | " | |
| R102 | " -223 | " | |
| R103 | " -391 | " | |

**[Video · Y]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R104 | QRD162J-152 | CR | |
| R105 | QRD161J-391 | ″ | |
| R106 | ″ -103 | ″ | |
| R107 | ″ -331 | ″ | |
| R108 | ″ -471 | ″ | |
| R109 | — | — | |
| R110 | QVZ3517-473 | VR | SHARPNESS PRESET |
| R111 | QRD161J-472 | CR | |
| R112 | ″ -102 | ″ | |
| R113 | ″ -103 | ″ | |
| R114 | ″ -222 | ″ | |
| R115 | ″ -750 | ″ | |
| R116 | ″ -221 | ″ | |
| R117 | ″ -181 | ″ | |
| R118 | ″ -222 | ″ | |
| R119 | ″ -681 | ″ | |
| R120 | ″ -391 | ″ | |
| R121 | QVZ3517-102 | VR | SP. REC. FM |
| R122 | ″ -102 | ″ | |
| R123 | QRD161J-222 | CR | |
| R124 | QVZ3517-102 | VR | EP. REC. COL. |
| R125 | QRD161J-222 | CR | |
| R126 | — | — | |
| R127 | QRD161J-121 | CR | |
| R128 | ″ -820 | ″ | |
| R129 | ″ -561 | ″ | |
| R130 | ″ -393 | ″ | |
| R131 | ″ -331 | ″ | |
| R132 | ″ -222 | ″ | |
| R133 | QVZ3517-102 | VR | SP. REC. COL. |
| R134 | QRD161J-222 | CR | |
| R135 | — | — | |
| R136 | QRD161J-121 | CR | |
| R137 | ″ -820 | ″ | |
| R138 | ″ -561 | ″ | |
| R139 | ″ -393 | ″ | |
| R140 | ″ -331 | ″ | |
| R141 | ″ -222 | ″ | |
| R142 | ″ -393 | ″ | |
| R143 | ″ -103 | ″ | |
| R144 | ″ -561 | ″ | |
| R145 | ″ -393 | ″ | |
| R146 | ″ -222 | ″ | |
| R147 | ″ -393 | ″ | |
| R148 | ″ -750 | ″ | |
| R149 | ″ -471 | ″ | |
| R150 | ″ -103 | ″ | |
| R151 | ″ -103 | ″ | |
| R152 | ″ -332 | ″ | |
| R153 | ″ -681 | ″ | |
| R154 | ″ -822 | ″ | |
| R155 | — | — | |
| R156 | QRD161J-223 | CR | |
| R157 | — | — | |
| R158 | QRD162J-681 | CR | |
| R159 | — | — | |
| R160 | QRD161J-561 | CR | |
| R161 | — | — | |
| R162 | QRD161J-103 | CR | |
| R163 | ″ -394 | ″ | |
| R164 | ″ -333 | ″ | |
| R165 | ″ -332 | ″ | |
| R166 | ″ -821 | ″ | |
| R167 | ″ -103 | ″ | |
| R168 | — | — | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R169 | QRD161J-103 | CR | |
| R170 | — | — | |
| R171 | QVZ3517-223 | VR | DYAC ADJ. |
| R172 | QRD161J-821 | CR | |
| R173 | ″ -102 | ″ | |
| R174 | ″ -331 | ″ | |
| R175 | ″ -181 | ″ | |
| R176 | — | — | |
| R177 | — | — | |
| R178 | — | — | |
| R179 | QRD161J-472 | CR | |
| R180 | ″ -563 | ″ | |
| R181 | ″ -563 | ″ | |
| R182 | ″ -472 | ″ | |
| R183 | ″ -181 | ″ | |
| R184 | — | — | |
| R185 | QRD161J-272 | CR | |
| R186 | ″ -183 | ″ | |
| R187 | ″ -473 | ″ | |
| R188 | ″ -122 | ″ | |
| R189 | ″ -563 | ″ | |
| R190 | ″ -333 | ″ | |
| R191 | ″ -120 | ″ | |
| R192 | ″ -682 | ″ | |
| R193 | ″ -183 | ″ | |
| R194 | ″ -222 | ″ | |
| R195 | ″ -332 | ″ | |
| R196 | ″ -101 | ″ | |
| R197 | — | — | |
| R198 | QRD161J-393 | CR | |
| R199 | ″ -683 | ″ | |
| R200 | ″ -681 | ″ | |
| R201 | ″ -681 | ″ | |
| R202 | ″ -471 | ″ | |
| R203 | ″ -681 | ″ | |
| R204 | ″ -272 | ″ | |
| R205 | ″ -272 | ″ | |
| R206 | ″ -563 | ″ | |
| R207 | ″ -682 | ″ | |
| R208 | ″ -103 | ″ | |
| R209 | — | — | |
| R210 | QRD161J-102 | CR | |
| R211 | — | — | |
| R212 | — | — | |
| R213 | — | — | |
| R214 | — | — | |
| R215 | QRD162J-0R0 | CR | |
| R216 | QRD161J-221 | ″ | |
| R217 | ″ -331 | ″ | |
| R218 | ″ -222 | ″ | |
| R219 | ″ -683 | ″ | |
| R220 | — | — | |
| R221 | QRD161J-472 | CR | |
| R222 | — | — | |
| R223 | QRD161J-103 | CR | |
| R224 | ″ -103 | ″ | |
| R225 | ″ -680 | ″ | |
| R226 | QRD162J-222 | ″ | |
| R227 | QRD161J-104 | ″ | |
| R228 | QRD182J-0R0 | ″ | |
| R229 | QRD161J-0R0 | ″ | |
| R230 | ″ -391 | ″ | |
| R231 | QRD182J-0R0 | ″ | |
| R232 | QRD162J-0R0 | ″ | |
| R233 | QRD182J-0R0 | ″ | |
| R234 | QRD162J-0R0 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C 1 | QCF31HP-223 | C Cap | |
| C 2 | QEK40JM-336 | E Cap | |
| C 3 | QCF31HP-103 | C Cap | |
| C 4 | " -223 | " | |
| C 5 | QEK61CM-106 | E Cap | |
| C 6 | QCS31HJ-121 | C Cap | |
| C 7 | QCF31HP-103 | " | |
| C 8 | " -103 | " | |
| C 9 | QCS31HJ-120 | " | |
| C10 | — | — | |
| C11 | QCS31HJ-220 | C Cap | |
| C12 | QCF31HP-103 | " | |
| C13 | " -223 | " | |
| C14 | QEK40JM-336 | E Cap | |
| C15 | QET60JM-336 | " | |
| C16 | QCF31HP-223 | C Cap | |
| C17 | " -103 | " | |
| C18 | QCS31HJ-560 | " | |
| C19 | QEK41HM-104 | E Cap | |
| C20 | QCF31HP-223 | C Cap | |
| C21 | " -223 | " | |
| C22 | QCT25CH-390 | " | |
| C23 | QCF31HP-103 | " | |
| C24 | QCS31HJ-220 | " | |
| C25 | QCF31HP-103 | " | |
| C26 | " -103 | " | |
| C27 | " -103 | " | |
| C28 | QET60JM-107 | E Cap | |
| C29 | QCF31HP-223 | C Cap | |
| C30 | " -103 | " | |
| C31 | " -223 | " | |
| C32 | QET60JM-336 | E Cap | |
| C33 | QCF31HP-103 | C Cap | |
| C34 | QET61CM-106 | E Cap | |
| C35 | QEN61CM-106 | NP Cap | |
| C36 | QET61CM-106 | E Cap | |
| C37 | QCF31HP-223 | C Cap | |
| C38 | QET60JM-336 | E Cap | |
| C39 | QCF31HP-222 | C Cap | |
| C40 | " -103 | " | |
| C41 | PU51163-151 | " | |
| C42 | — | — | |
| C43 | QCS31HJ-7R0 | C Cap | |
| C44 | QET61EM-475 | E Cap | |
| C45 | QET61CM-106 | " | |
| C46 | QCS31HJ-331 | C Cap | |
| C47 | " -391 | " | |
| C48 | QFN31HJ-104 | MY Cap | |
| C49 | QCF31HP-103 | C Cap | |
| C50 | QCT25CH-390 | " | |
| C51 | QET60JM-107 | E Cap | |
| C52 | QCF31HP-223 | C Cap | |
| C53 | QCS31HJ-121 | " | |
| C54 | QEK61HM-224 | E Cap | |
| C55 | QCF31HP-103 | C Cap | |
| C56 | QET61EM-335 | E Cap | |
| C57 | " -475 | " | |
| C58 | QET60JM-107 | " | |
| C59 | QET61CM-106 | " | |
| C60 | QCS31HJ-680 | C Cap | |
| C61 | " -470 | " | |
| C62 | " -100 | " | |
| C63 | — | — | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C64 | QFN31HJ-122 | MY Cap | |
| C65 | QET61HM-105 | E Cap | |
| C66 | QFN31HJ-122 | MY Cap | |
| C67 | QEN61HM-105 | NP Cap | |
| C68 | QET61HM-105 | E Cap | |
| C69 | QET61CM-106 | " | |
| C70 | " -106 | " | |
| C71 | — | — | |
| C72 | QET60JM-108 | E Cap | |
| C73 | QCF31HP-223 | C Cap | |
| C74 | PU51163-271 | " | |
| C75 | " -390 | " | |
| C76 | — | — | |
| C77 | QCF31HP-103 | C Cap | |
| C78 | QET60JM-476 | E Cap | |
| C79 | QCS31HJ-390 | C Cap | |
| C80 | QCT25CH-470 | " | |
| C81 | QCF31HP-103 | " | |
| C82 | QCS31HJ-100 | " | |
| C83 | " -470 | " | |
| C84 | " -680 | " | |
| C85 | " -331 | " | |
| C86 | " -680 | " | |
| C87 | QET61EM-475 | E Cap | |
| C88 | QEK41CM-106 | " | |
| C89 | QCS31HJ-121 | C Cap | |
| C90 | QET61HM-105 | E Cap | |
| C91 | " -105 | " | |
| C92 | QCS31HJ-221 | C Cap | |
| C93 | QCF31HP-223 | " | |
| C94 | QET61AM-477 | E Cap | |
| C95 | QCF31HP-222 | C Cap | |
| C96 | " -222 | " | |
| C97 | " -103 | " | |
| C98 | " -102 | " | |
| C99 | " -103 | " | |
| C100 | QCT25CH-390 | " | |
| C101 | — | — | |
| C102 | QCS31HJ–820 | C Cap | |
| C103 | " -181 | " | |
| C104 | QCF31HP-103 | " | |
| C105 | QET61CM-106 | E Cap | |
| C106 | QCS31HJ-121 | C Cap | |
| C107 | " -121 | " | |
| C108 | QCF31HP-103 | " | |
| C109 | QET60JM-336 | E Cap | |
| C110 | QCF31HP-223 | C Cap | |
| C111 | " -103 | " | |
| C112 | " -223 | " | |
| C113 | QCS31HJ-270 | " | |
| C114 | QEK61HM-105 | E Cap | |
| C115 | QCF31HP-103 | C Cap | |
| C116 | QEK61CM-106 | E Cap | |
| C117 | QEK60JM-476 | " | |
| C118 | QCF31HP-223 | C Cap | |
| C119 | " -103 | " | |
| C120 | " -223 | " | |
| C121 | QCS31HJ-330 | " | |
| C122 | QEK61HM-105 | E Cap | |
| C123 | QCF31HP-103 | C Cap | |
| C124 | QEK61CM-106 | E Cap | |
| C125 | QEK61AM-476 | " | |
| C126 | QCF31HP-223 | C Cap | |
| C127 | QET60JM-108 | E Cap | |
| C128 | QET61AM-107 | " | |

## [Video · Y]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C129 | QET61CM-106 | E Cap | |
| C130 | QET61AM-336 | ″ | |
| C131 | — | — | |
| C132 | — | — | |
| C133 | — | — | |
| C134 | — | — | |
| C135 | — | — | |
| C136 | QET61AM-336 | E Cap | |
| C137 | — | — | |
| C138 | QCF31HP-223 | C Cap | |
| C139 | ″ -223 | ″ | |
| C140 | QET61HM-105 | E Cap | |
| C141 | QET61EM-475 | ″ | |
| C142 | QCF31HP-223 | C Cap | |
| C143 | QET61CM-106 | E Cap | |
| C144 | QCF31HP-103 | C Cap | |
| C145 | QET61CM-106 | E Cap | |
| C146 | QET61HM-225 | ″ | |
| C147 | QCF31HP-103 | C Cap | |
| C148 | ″ -103 | ″ | |
| C149 | ″ -103 | ″ | |
| C150 | ″ -223 | ″ | |
| C151 | QET60JM-107 | E Cap | |
| C152 | ″ -476 | ″ | |
| C153 | QCS31HJ-221 | C Cap | |
| C154 | QET60JM-476 | E Cap | |
| C155 | QCS31HJ-470 | C Cap | |
| C156 | ″ -8R0 | ″ | |
| C157 | ″ -8R0 | ″ | |
| C158 | QET60JM-476 | E Cap | |
| C159 | QET61CM-226 | ″ | |
| C160 | QET60JM-476 | ″ | |
| C161 | QCF31HP-102 | C Cap | |
| C162 | ″ -102 | ″ | |
| C163 | QET61EM-475 | E Cap | |
| C164 | ″ -475 | ″ | |
| C165 | QCS31HJ-180 | C Cap | |
| C166 | — | — | |
| C167 | QCF31HP-223 | C Cap | |
| C168 | — | — | |
| C169 | QCF31HP-103 | C Cap | |
| C170 | ″ -223 | ″ | |
| C171 | — | — | |
| C172 | — | — | |
| C173 | QET61HM-105 | E Cap | |
| C174 | — | — | |
| C175 | — | — | |
| C176 | QET61EM-475 | E Cap | |
| C177 | QEK40JM-476 | ″ | |
| C178 | QCF31HP-102 | C Cap | |
| C179 | QCS11HJ-330 | ″ | |
| C180 | — | — | |
| C181 | QCF11HP-223 | C Cap | |
| C182 | QEK41AM-476 | E Cap | |
| C183 | QET60JM-107 | ″ | |
| C184 | — | — | |
| C185 | QCS31HJ-151 | C Cap | |
| C186 | QCS11HJ-820 | ″ | |
| C187 | ″ -270 | ″ | |
| C188 | ″ -121 | ″ | |
| C189 | QEK41CM-106 | E Cap | |
| C190 | QEN41CM-106 | NP Cap | |
| C191 | QEK41AM-476 | E Cap | |
| C192 | QET60JM-227 | ″ | |
| C193 | QCS11HJ-560 | C Cap | |
| C194 | QET40JM-107 | E Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L 1 | PU53223-101G | Peaking Coil | |
| L 2 | ″ -101G | ″ | |
| L 3 | ″ -560JG | ″ | |
| L 4 | ″ -560JG | ″ | |
| L 5 | ″ -390JG | ″ | |
| L 6 | ″ -101G | ″ | |
| L 7 | ″ -101G | ″ | |
| L 8 | ″ -180JG | ″ | |
| L 9 | ″ -180JG | ″ | |
| L10 | ″ -180JG | ″ | |
| L11 | ″ -101G | ″ | |
| L12 | ″ -101G | ″ | |
| L13 | ″ -101G | ″ | |
| L14 | ″ -101G | ″ | |
| L15 | ″ -101G | ″ | |
| L16 | ″ -221G | ″ | |
| L17 | ″ -560JG | ″ | |
| L18 | ″ -330JG | ″ | |
| L19 | — | — | |
| L20 | — | — | |
| L21 | PU53223-270JG | Peaking Coil | |
| L22 | ″ -330JG | ″ | |
| L23 | ″ -560JG | ″ | |
| L24 | PU48530-331J | ″ | |
| L25 | PU53223-101G | ″ | |
| L26 | ″ -121JG | ″ | |
| L27 | ″ -101G | ″ | |
| L28 | ″ -470JG | ″ | |
| L29 | ″ -271JG | ″ | |
| L30 | ″ -101G | ″ | |
| L31 | ″ -100JG | ″ | |
| L32 | ″ -101G | ″ | |
| L33 | ″ -100JG | ″ | |
| L34 | ″ -101G | ″ | |
| L35 | ″ -101G | ″ | |
| L36 | PU55184 | I.F.T. | |
| L37 | PU53223-101G | Peaking Coil | |
| L38 | ″ -101G | ″ | |
| L39 | ″ -150JG | ″ | |
| L40 | PU53618-681JD | ″ | |
| L41 | PU53223-220JG | ″ | |
| L42 | ″ -220JG | ″ | |
| L43 | ″ -101G | ″ | |
| L44 | ″ -330JG | ″ | |
| L45 | — | — | |
| L46 | PU53223-220JG | Peaking Coil | |
| L47 | ″ -8R2JG | ″ | |
| L48 | ″ -680JG | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| CN 1 | PU49215-8 | Cap. Housing | |
| CN 2 | — | — | |
| CN 3 | PU49215-2 | Cap. Housing | |
| CN 4 | " -2 | " | |
| CN 5 | " -2 | " | |
| CN 6 | " -2 | " | |
| CN 7 | " -2R | " | |
| CN 8 | " -7 | " | |
| CN 9 | " -6 | " | |
| CN10 | — | — | |
| CN11 | — | — | |
| CN12 | PU51945-06 | Cap. Housing | RF Conv. |
| CN13 | PU49215-2 | " | |
| CN14 | " -4 | " | |
| LPF 1 | PU56144 | L.P.F. | |
| EQ 1 | PU53224-3 | Equalizer | |
| EQ 2 | — | — | |
| EQ 3 | PU53229 | Equalizer | |
| EQ 4 | PU53501-4 | " | |
| DL 1 | PU56131 | 1H Delay Line | |
| | PU50766 | Test Pin | |
| SW 1 | QSS1201-027 | Slide Switch | DYAC |
| | PQ40378 | Spacer | |

**[Video · COLOR]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| | **[COLOR section]** | | |
| IC401 | HA11741 | Integrated Circuit | |
| Q401 | 2SC2021Q,R | Transistor | |
| Q402 | " | " | |
| Q403 | DTC114F | D. Transistor | |
| Q404 | — | — | |
| Q405 | 2SC2021Q,R | Transistor | |
| Q406 | " | " | |
| Q407 | " | " | |
| Q408 | " | " | |
| Q409 | 2SB641S | " | |
| D401 | 1SS133 | Diode | |
| D402 | " | " | |
| D403 | " | " | |
| R401 | QRD161J-102 | CR | |
| R402 | " -102 | " | |
| R403 | " -272 | " | |
| R404 | " -473 | " | |
| R405 | " -151 | " | |
| R406 | " -102 | " | |
| R407 | " -561 | " | |
| R408 | " -681 | " | |
| R409 | QVZ3517-102 | VR | SP. PB. COL. |
| R410 | " -222 | " | |
| R411 | — | — | |
| R412 | QRD161J-681 | CR | |
| R413 | " -102 | " | |
| R414 | " -122 | " | |
| R415 | " -331 | " | |
| R416 | " -102 | " | |
| R417 | " -472 | " | |
| R418 | " -472 | " | |
| R419 | " -273 | " | |
| R420 | " -392 | " | |
| R421 | QRD121J-391 | " | |
| R422 | QRD161J-331 | " | |
| R423 | " -122 | " | |
| R424 | " -562 | " | |
| R425 | " -471 | " | |
| R426 | — | — | |
| R427 | QRD161J-103 | CR | |
| R428 | — | — | |
| R429 | — | — | |
| R430 | — | — | |
| R431 | QRD161J-472 | CR | |
| R432 | " -223 | " | |
| R433 | " -223 | " | |
| R434 | " -332 | " | |
| R435 | " -123 | " | |
| R436 | " -123 | " | |

## [Video · COLOR]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R437 | QRD161J-562 | CR | |
| R438 | ″ -562 | ″ | |
| R439 | ″ -222 | ″ | |
| R440 | ″ -101 | ″ | |
| R441 | QVZ3517-682 | VR | CONV. BAL. |
| R442 | QRD161J-102 | CR | |
| R443 | ″ -564 | ″ | |
| R444 | ″ -681 | ″ | |
| R445 | ″ -821 | ″ | |
| R446 | ″ -152 | ″ | |
| R447 | ″ -471 | ″ | |
| R448 | ″ -182 | ″ | |
| R449 | ″ -472 | ″ | |
| R450 | ″ -103 | ″ | |
| R451 | — | — | |
| R452 | QRD161J-101 | CR | |
| R453 | ″ -562 | ″ | |
| R454 | QVZ3517-103 | VR | AFC |
| R455 | QRD161J-274 | CR | |
| R456 | QVZ3517-223 | VR | VXO |
| R457 | QRD161J-683 | CR | |
| R458 | ″ -473 | ″ | |
| R459 | ″ -821 | ″ | |
| R460 | — | — | |
| R461 | — | — | |
| R462 | — | — | |
| R463 | — | — | |
| R464 | QVZ3517-102 | VR | PB 3.58 MHz |
| R465 | QRD161J-331 | CR | |
| R466 | ″ -562 | ″ | |
| R467 | ″ -222 | ″ | |
| R468 | — | — | |
| R469 | — | — | |
| R470 | QRD161J-471 | CR | |
| R471 | ″ -152 | ″ | |
| C401 | QCF31HP-103 | C Cap | |
| C402 | QFN31HJ-473 | MY Cap | |
| C403 | QCF31HP-103 | C Cap | |
| C404 | — | — | |
| C405 | QEK61AM-476 | E Cap | |
| C406 | QCF31HP-223 | C Cap | |
| C407 | ″ -103 | ″ | |
| C408 | ″ -103 | ″ | |
| C409 | QFN31HK-333 | MY Cap | |
| C410 | QCS31HJ-391 | C Cap | |
| C411 | QFN31HK-333 | MY Cap | |
| C412 | QFN31HJ-332 | ″ | |
| C413 | ″ -152 | ″ | |
| C414 | QCF31HP-223 | C Cap | |
| C415 | QET61CM-106 | E Cap | |
| C416 | QFN31HJ-332 | MY Cap | |
| C417 | QET61HM-225 | E Cap | |
| C418 | QFN31HJ-473 | MY Cap | |
| C419 | QET61EM-475 | E Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C420 | QCT25CH-270 | C Cap | |
| C421 | ″ -220 | ″ | |
| C422 | QCS31HJ-820 | ″ | |
| C423 | QCF31HP-103 | ″ | |
| C424 | ″ -103 | ″ | |
| C425 | QFN31HK-223 | MY Cap | |
| C426 | — | — | |
| C427 | — | — | |
| C428 | — | — | |
| C429 | — | — | |
| C430 | QET61AM-476 | E Cap | |
| C431 | QCF31HP-223 | C Cap | |
| C432 | ″ -102 | ″ | |
| C433 | ″ -103 | ″ | |
| C434 | ″ -103 | ″ | |
| C435 | ″ -103 | ″ | |
| C436 | ″ -103 | ″ | |
| C437 | QFN31HJ-472 | MY Cap | |
| C438 | QET61HM-225 | E Cap | |
| C439 | QET61AM-227 | ″ | |
| C440 | QCF31HP-473 | C Cap | |
| C441 | — | — | |
| C442 | QFN31HJ-473 | MY Cap | |
| C443 | QET61EM-475 | E Cap | |
| C444 | QCF31HP-223 | C Cap | |
| C445 | ″ -103 | ″ | |
| C446 | QCS31HJ-561 | ″ | |
| C447 | ″ -120 | ″ | |
| C448 | — | — | |
| C449 | QFN31HK-223 | MY Cap | |
| C450 | ″ -223 | ″ | |
| C451 | PU51163-201 | C Cap | |
| C452 | QEK51HM-224 | E Cap | |
| C453 | — | — | |
| C454 | — | — | |
| C455 | QFN31HJ-562 | MY Cap | |
| C456 | QCF31HP-103 | C Cap | |
| C457 | QCS11HJ-270 | ″ | |
| C458 | QFN11HJ-332 | MY Cap | |
| L401 | PU53223-101G | Peaking Coil | |
| L402 | PU47051-222 | Coil | |
| L403 | PU53223-101G | Peaking Coil | |
| L404 | PU53618-821JD | ″ | |
| L405 | PU53223-101G | ″ | |
| L406 | ″ -680JG | ″ | |
| L407 | PU48530-471K | ″ | |
| LPF401 | PU53233-4 | L.P.F. | |
| LPF402 | PU53232-2 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| EQ401 | PU53501-5 | Equalizer | |
| EQ402 | " -6 | " | |
| BPF401 | PU53234-3 | B.P.F. | |
| BPF402 | PU52648-2 | " | |
| DL401 | PU50723-3 | Comb Filter | |
| X401 | PU47931-2 | Crystal | |
| | PU50766 | Test Pin | TP401, 403, 404, 421 |
| | PU40734 | Test Point | TP412 |
| R301 | – | – | |
| R302 | – | – | |
| R303 | QRD161J-222 | CR | |
| R304 | – | – | |
| R305 | – | – | |
| R306 | – | – | |
| R307 | – | – | |
| R308 | – | – | |
| R309 | – | – | |
| R310 | – | – | |
| R311 | – | – | |
| R312 | – | – | |
| R313 | – | – | |
| R314 | – | – | |
| R315 | – | – | |
| R316 | – | – | |
| R317 | – | – | |
| R318 | QRD161J-222 | CR | |
| CN301 | PU49215-5 | Cap. Housing | |
| | PU56586 | RF Conv. Ass'y | |
| ⚠ | PQ30188-2 | RF Holder | |
| | SDSF3010Z | Tap. Screw | |
| | PQ41028 | Spacer | |

## 6.2.4 Audio/Servo/Mechacon (A/S/M.) Circuit Board Ass'y $\boxed{0}\boxed{4}$ . . . . . . . . . . . . . . . . PU10864B-4

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| **[Audio Section]** | | | |
| IC 1 | 14VT06 | Integrated Circuit | |
| IC 2 | TA7361P | " | |
| IC 3 | 5VT01 | " | |
| IC 4 | AN6394 | " | |
| IC 5 | 14VT07 | " | |
| IC 6 | 11VT01 | " | |
| IC 7 | – | – | |
| IC 8 | TA7361P | Integrated Circuit | |
| IC 9 | AN6394 | " | |
| IC10 | 14VT07 | " | |
| IC11 | 11VT01 | " | |
| IC12 | – | – | |
| IC13 | TK15050 | Integrated Circuit | |
| Q 1 | 2SD639R,S | Transistor | |
| Q 2 | 2SB644R,S | " | |
| ⚠Q 3 | " | " | |
| ⚠Q 4 | 2SD639R,S | " | |
| ⚠Q 5 | 2SB644S | " | |
| Q 6 | 2SB641R,S | " | |
| Q 7 | 2SD636R,S | " | |
| Q 8 | DTC124F | D. Transistor | |
| Q 9 | " | " | |
| Q10 | " | " | |
| Q11 | " | " | |
| Q12 | 2SB641R,S | Transistor | |
| Q13 | 2SD636R,S | " | |
| Q14 | DTC124F | D. Transistor | |
| Q15 | " | " | |
| Q16 | " | " | |
| Q17 | " | " | |
| Q18 | 2SD639R,S | Transistor | |
| Q19 | DTC124F | D. Transistor | |
| Q20 | " | " | |
| Q21 | – | – | |
| Q22 | – | – | |
| Q23 | – | – | |
| Q24 | 2SD636Q,R,S | Transistor | |
| D 1 | 1SS133 | Diode | |
| D 2 | " | " | |
| D 3 | " | " | |
| D 4 | – | – | |
| D 5 | 1SS132 | Diode | |
| D 6 | " | " | |
| D 7 | RD6.2EB2 | Zener Diode | |
| D 8 | 1SS132 | Diode | |

## [Audio/S/M]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L 1 | PU54710-102 | Coil | |
| L 2 | PU49994-181 | " | |
| L 3 | " -560 | " | |
| L 4 | PU30284-28R | " | |
| L 5 | PU54710-472 | " | |
| L 6 | " -472 | " | |
| L 7 | " -472 | " | |
| L 8 | " -472 | " | |
| L 9 | PU53618-561F | Peaking Coil | |
| CN 1 | PU49215-2 | Cap. Housing | |
| CN 2 | " -2Y | " | |
| CN 3 | " -4 | " | |
| CN 4 | " -3 | " | |
| CN 5 | " -2R | " | |
| CN 6 | " -3 | " | |
| CN 7 | " -3R | " | |
| CN 8 | " -3Y | " | |
| CN 9 | " -3R | " | |
| CN10 | " -4 | " | |
| CN11 | — | — | |
| CN12 | PU49215-2 | Cap. Housing | |
| CN13 | — | — | |
| CN14 | — | — | |
| CN15 | — | — | |
| CN16 | PU49215-2 | Cap. Housing | |
| RY 1 | PU55259 | Relay | |
| RY 2 | " | " | |
| RY 3 | " | " | |
| T 1 | PU56138 | Osc. Trans. | |
| T 2 | PU56139 | Trap Coil | |
| T 3 | " | " | |
| SW 1 | PU55852 | Slide Switch | NR |
| SW 2 | PU55852-3 | " | Dub. |
| SW 3 | " -4 | " | Monitor |
| SW 4 | PU55298 | " | P. Level |
| SW 5 | PU55855 | Rotary Switch | REC SEL. |
| | QMS6302-124 | Headphone Jack | |
| | QMS6331-001 | Mic. Jack | |
| | PU34689 | Shield Case | |
| | PU34690 | " | |
| | PU55774 | Test Pin | TP3–6 |

## [A/Servo/M]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| **[Servo Section]** | | | |
| IC401 | BA6305LN | Integrated Circuit | |
| IC402 | HA11780 | " | |
| IC403 | BA831S | " | |
| IC404 | BA236 | " | |
| IC405 | UPC393C | " | or LM393P |
| IC406 | M5218P | " | |
| IC407 | UPC393C | " | or LM393P |
| IC408 | UPD4030BC | " | or TP4030BN |
| IC409 | M50767-602P | " | |
| IC410 | UPD1511AC-029 | " | |
| IC411 | BA6302A | " | |
| IC412 | UPD4066BC | " | or TP4066BN |
| IC413 | " | " | or " |
| IC414 | UPD1511AC-028 | " | |
| IC415 | BA6328 | " | |
| IC416 | BA6302A | " | |
| IC417 | UPC358C | " | |
| ⚠ IC418 | " | " | |
| IC419 | UPD4013BC | " | or TP4013BN |
| IC420 | " | " | or " |
| IC421 | UPD4011BC | " | or TC4011BP |
| Q401 | DTC124F | D. Transistor | |
| Q402 | DTA124F | " | |
| Q403 | " | " | |
| Q404 | " | " | |
| Q405 | " | " | |
| Q406 | DTC124F | " | |
| Q407 | DTC144F | D. Transistor | |
| Q408 | 2SB641P,Q,R | Transistor | |
| Q409 | 2SD636P,Q,R | " | |
| Q410 | DTA124F | D. Transistor | |
| Q411 | 2SB641P,Q,R | Transistor | |
| Q412 | " | " | |
| Q413 | 2SD636P,Q,R | " | |
| Q414 | " | " | |
| Q415 | " | " | |
| Q416 | DTA124F | D. Transistor | |
| Q417 | DTC124F | " | |
| Q418 | 2SB643P,Q,R | Transistor | |
| Q419 | DTC124F | D. Transistor | |
| Q420 | " | " | |
| Q421 | " | " | |
| Q422 | DTC144N | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| D401 | 1SS133 | Diode | |
| D402 | " | " | |
| D403 | " | " | |
| D404 | " | " | |
| D405 | " | " | |
| D406 | " | " | |
| D407 | " | " | |
| D408 | " | " | |
| D409 | " | " | |
| D410 | " | " | |
| D411 | " | " | |
| D412 | " | " | |
| D413 | " | " | |
| D414 | — | — | |
| D415 | — | — | |
| D416 | 1SS133 | Diode | |
| D417 | " | " | |
| D418 | " | " | |
| D419 | " | " | |
| D420 | " | " | |
| D421 | " | " | |
| D422 | " | " | |
| D423 | " | " | |
| D424 | " | " | |
| D425 | " | " | |
| D426 | " | " | |
| D427 | " | " | |
| D428 | " | " | |
| D429 | " | " | |
| D430 | " | " | |
| D431 | " | " | |
| D432 | " | " | |
| D433 | " | " | |
| D434 | " | " | |
| D435 | " | " | |
| D436 | " | " | |
| D437 | " | " | |
| D438 | " | " | |
| D439 | " | " | |
| D440 | " | " | |
| D441 | — | — | |
| D442 | 1SS133 | Diode | |
| D443 | " | " | |
| D444 | " | " | |
| D445 | " | " | |
| D446 | — | — | |
| D447 | 1SS133 | Diode | |
| D448 | " | " | |
| D449 | " | " | |
| DA401 | DAN-201 | Diode Array | or MC921<br>MC921-28 |
| DA402 | MC921-28 | " | or MC921 |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R401 | QRD161J-102 | CR | |
| R402 | " -102 | " | |
| R403 | " -561 | " | |
| R404 | " -223 | " | |
| R405 | " -105 | " | |
| R406 | " -103 | " | |
| R407 | " -471 | " | |
| R408 | " -473 | " | |
| R409 | — | — | |
| R410 | QRD161J-103 | CR | |
| R411 | QVZ1802-224 | VR | V. Lock |
| R412 | QRD161J-224 | CR | |
| R413 | " -224 | " | |
| R414 | QVZ3517-473 | VR | Drum PU Pulse |
| R415 | " -334 | " | CH-1 SW |
| R416 | QRD161J-104 | CR | |
| R417 | QVZ3517-334 | VR | CH-2 SW |
| R418 | QRD161J-104 | CR | |
| R419 | " -184 | " | |
| R420 | " -563 | " | |
| R421 | " -103 | " | |
| R422 | " -102 | " | |
| R423 | " -103 | " | |
| R424 | " -103 | " | |
| R425 | " -103 | " | |
| R426 | " -333 | " | |
| R427 | " -333 | " | |
| R428 | " -104 | " | |
| R429 | " -104 | " | |
| R430 | QVZ3517-104 | VR | REC SW |
| R431 | QRD161J-105 | CR | |
| R432 | " -104 | " | |
| R433 | " -334 | " | |
| R434 | " -223 | " | |
| R435 | QVZ3517-223 | VR | Tracking Preset |
| R436 | QRD161J-273 | CR | |
| R437 | PU56164-3 | VR | Tracking |
| R438 | QRD161J-102 | CR | |
| R439 | — | — | |
| R440 | QRD161J-224 | CR | |
| R441 | " -104 | " | |
| R442 | " -334 | " | |
| R443 | " -394 | " | |
| R444 | " -153 | " | |
| R445 | " -563 | " | |
| R446 | QVZ3517-333 | VR | EP REV x 1 Preset |
| R447 | " -333 | " | EP FWD x 3 Preset |
| R448 | QRD161J-334 | CR | |
| R449 | QVZ3244-224 | VR | SP Slow Preset |
| R450 | " -224 | " | LP/EP Slow Preset |
| R451 | PU56164-2 | " | Slow Tracking |
| R452 | QRD161J-333 | CR | |
| R453 | " -473 | " | |
| R454 | " -334 | " | |
| R455 | " -105 | " | |
| R456 | " -472 | " | |
| R457 | " -274 | " | |
| R458 | " -105 | " | |
| R459 | " -103 | " | |
| R460 | " -105 | " | |
| R461 | " -274 | " | |
| R462 | " -103 | " | |
| R463 | " -105 | " | |
| R464 | " -822 | " | |
| R465 | " -224 | " | |

**[A/Servo/M]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R466 | QRD161J-103 | CR | |
| R467 | ″ -221 | ″ | |
| R468 | ″ -103 | ″ | |
| R469 | ″ -822 | ″ | |
| R470 | ″ -474 | ″ | |
| R471 | ″ -103 | ″ | |
| R472 | ″ -103 | ″ | |
| R473 | ″ -105 | ″ | |
| R474 | ″ -222 | ″ | |
| R475 | ″ -333 | ″ | |
| R476 | ″ -683 | ″ | |
| R477 | ″ -103 | ″ | |
| R478 | ″ -333 | ″ | |
| R479 | — | — | |
| R480 | QRD161J-473 | CR | |
| R481 | ″ -333 | ″ | |
| R482 | ″ -473 | ″ | |
| R483 | ″ -823 | ″ | |
| R484 | ″ -103 | ″ | |
| R485 | — | — | |
| R486 | QRD161J-104 | CR | |
| R487 | ″ -105 | ″ | |
| R488 | ″ -103 | ″ | |
| R489 | ″ -473 | ″ | |
| R490 | ″ -473 | ″ | |
| R491 | ″ -104 | ″ | |
| R492 | QVZ3517-104 | VR | LP Cap. Discr. |
| R493 | ″ -473 | ″ | SP/EP Cap. Discr. |
| R494 | QRD161J-223 | CR | |
| R495 | ″ -473 | ″ | |
| R496 | ″ -333 | ″ | |
| R497 | ″ -333 | ″ | |
| R498 | ″ -824 | ″ | |
| R499 | ″ -474 | ″ | |
| R500 | ″ -333 | ″ | |
| R501 | ″ -102 | ″ | |
| R502 | ″ -562 | ″ | |
| R503 | ″ -182 | ″ | |
| R504 | ″ -103 | ″ | |
| R505 | ″ -824 | ″ | |
| R506 | ″ -105 | ″ | |
| R507 | QRD167J-104 | ″ | |
| R508 | ″ -473 | ″ | |
| R509 | QRD161J-823 | ″ | |
| R510 | ″ -124 | ″ | |
| R511 | ″ -563 | ″ | |
| R512 | ″ -563 | ″ | |
| R513 | ″ -104 | ″ | |
| R514 | ″ -563 | ″ | |
| R515 | ″ -184 | ″ | |
| R516 | ″ -104 | ″ | |
| R517 | ″ -473 | ″ | |
| R518 | ″ -563 | ″ | |
| R519 | — | — | |
| R520 | QRD161J-103 | CR | |
| R521 | ″ -103 | ″ | |
| R522 | ″ -103 | ″ | |
| R523 | ″ -223 | ″ | |
| R524 | ″ -333 | ″ | |
| R525 | ″ -562 | ″ | |
| R526 | ″ -562 | ″ | |
| R527 | ″ -104 | ″ | |
| R528 | ″ -105 | ″ | |
| R529 | ″ -103 | ″ | |
| R530 | ″ -104 | ″ | |
| R531 | QVZ3520-223 | VR | H. Sync. Discr. |
| R532 | QRD161J-103 | CR | |
| R533 | ″ -473 | ″ | |
| R534 | ″ -333 | ″ | |
| R535 | QVZ3520-683 | VR | Drum Discr. |
| R536 | QRD161J-154 | CR | |
| R537 | ″ -563 | ″ | |
| R538 | ″ -682 | ″ | |
| R539 | ″ -333 | ″ | |
| R540 | ″ -473 | ″ | |
| R541 | ″ -472 | ″ | |
| R542 | ″ -564 | ″ | |
| R543 | ″ -472 | ″ | |
| R544 | ″ -223 | ″ | |
| R545 | ″ -473 | ″ | |
| R546 | ″ -473 | ″ | |
| R547 | ″ -104 | ″ | |
| R548 | ″ -105 | ″ | |
| R549 | ″ -103 | ″ | |
| R550 | ″ -105 | ″ | |
| R551 | ″ -223 | ″ | |
| R552 | ″ -684 | ″ | |
| R553 | ″ -683 | ″ | |
| R554 | ″ -563 | ″ | |
| R555 | ″ -103 | ″ | |
| R556 | — | — | |
| R557 | QRD161J-103 | CR | |
| R558 | ″ -153 | ″ | |
| R559 | ″ -562 | ″ | |
| R560 | ″ -683 | ″ | |
| R561 | PU56164 | VR | Sharpness CTL |
| R562 | QRD161J-102 | CR | |
| R563 | ″ -333 | ″ | |
| R564 | — | — | |
| R565 | — | — | |
| R566 | QRD161J-333 | CR | |
| R567 | ″ -333 | ″ | |
| R568 | ″ -333 | ″ | |
| R569 | ″ -333 | ″ | |
| R570 | ″ -472 | ″ | |
| R571 | ″ -473 | ″ | |
| R572 | ″ -473 | ″ | |
| R573 | ″ -393 | ″ | |
| R574 | ″ -393 | ″ | |
| R575 | ″ -822 | ″ | |
| R576 | ″ -473 | ″ | |
| R577 | ″ -333 | ″ | |
| R578 | ″ -224 | ″ | |
| R579 | QRD187J-223 | ″ | |
| R580 | QRD161J-273 | ″ | |
| R581 | ″ -472 | ″ | |
| R582 | QRD187J-472 | ″ | |
| R583 | QRD161J-472 | ″ | |
| R584 | ″ -472 | ″ | |
| R585 | ″ -103 | ″ | |
| R586 | QRD162J-104 | ″ | |
| R587 | QRD161J-103 | ″ | |
| R588 | ″ -104 | ″ | |
| R589 | ″ -102 | ″ | |
| R590 | ″ -472 | ″ | |
| R591 | ″ -223 | ″ | |
| R592 | ″ -104 | ″ | |
| R593 | ″ -104 | ″ | |
| R594 | QRD167J-103 | ″ | |
| R595 | QRD161J-473 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R596 | QRD161J-472 | CR | |
| R597 | " -102 | " | |
| R598 | " -472 | " | |
| R599 | " -472 | " | |
| R600 | " -153 | " | |
| R601 | — | — | |
| R602 | QRD161J-222 | CR | |
| R603 | " -222 | " | |
| R604 | " -823 | " | |
| R605 | " -222 | " | |
| R606 | " -104 | " | |
| | | | |
| C401 | QET61CM-476 | E Cap | |
| C402 | " -226 | " | |
| C403 | QFN31HK-102 | MY Cap | |
| C404 | QET61CM-476 | E Cap | |
| C405 | QCS31HJ-221 | C Cap | |
| C406 | QFN31HK-153 | MY Cap | |
| C407 | QET61HM-105 | E Cap | |
| C408 | QET61CM-476 | " | |
| C409 | QFN31HJ-682 | MY Cap | |
| C410 | " -102 | " | |
| C411 | " -222 | " | |
| C412 | " -222 | " | |
| C413 | QET61CM-106 | E Cap | |
| C414 | QFN31HK-102 | MY Cap | |
| C415 | " -682 | " | |
| C416 | " -682 | " | |
| C417 | " -102 | " | |
| C418 | QET41CM-476 | E Cap | |
| C419 | " -476 | " | |
| C420 | QEB41CM-106 | " | |
| C421 | " -106 | " | |
| C422 | " -106 | " | |
| C423 | " -106 | " | |
| C424 | QFN31HK-273 | MY Cap | |
| C425 | " -333 | " | |
| C426 | QCS31HJ-331 | C Cap | |
| C427 | QFN31HK-223 | MY Cap | |
| C428 | QCS31HJ-471 | C Cap | |
| C429 | QFN31HK-102 | MY Cap | |
| C430 | QFN41HJ-104 | " | |
| C431 | QET61CM-476 | E Cap | |
| C432 | QFN31HK-823 | MY Cap | |
| C433 | QFN31HJ-104 | " | |
| C434 | QFN31HK-273 | " | |
| C435 | " -473 | " | |
| C436 | " -102 | " | |
| C437 | QCS31HJ-331 | C Cap | |
| C438 | QEN61HM-105 | NP Cap | |
| C439 | QFN31HK-104 | MY Cap | |
| C440 | " -104 | " | |
| C441 | " -104 | " | |
| C442 | QET61CM-476 | E Cap | |
| C443 | QFN31HK-104 | MY Cap | |
| C444 | QET61HM-105 | E Cap | |
| C445 | QFN31HK-222 | MY Cap | |
| C446 | " -103 | " | |
| C447 | " -102 | " | |
| C448 | " -103 | " | |
| C449 | QET61CM-106 | E Cap | |
| C450 | QEN41HM-105 | NP Cap | |
| C451 | QCS31HJ-681 | C Cap | |
| C452 | QET61HM-105 | E Cap | |
| C453 | QET41AM-107 | " | |
| C454 | QET61CM-106 | " | |
| C455 | QCS31HJ-330 | C Cap | |
| C456 | QET41CM-106 | E Cap | |
| C457 | QFN31HK-122 | MY Cap | |
| C458 | QET41CM-106 | E Cap | |
| C459 | QCF31EZ-103 | C Cap | |
| C460 | " -103 | " | |
| C461 | QET61CM-106 | E Cap | |
| C462 | QCS31HJ-680 | C Cap | |
| C463 | " -680 | " | |
| C464 | QET61HM-474 | E Cap | |
| C465 | QET61CM-226 | " | |
| C466 | QFN31HK-152 | MY Cap | |
| C467 | QET61CM-476 | E Cap | |
| C468 | QFN31HK-103 | MY Cap | |
| C469 | QFM71HK-333 | " | |
| C470 | QEN61HM-474 | NP. Cap | |
| C471 | QFN31HK-154 | MY Cap | |
| C472 | QEN61HM-474 | NP. Cap | |
| C473 | QFN41HK-184 | MY Cap | |
| C474 | QCF31EZ-103 | C Cap | |
| C475 | QET61CM-106 | E Cap | |
| C476 | QCS31HJ-680 | C Cap | |
| C477 | " -680 | " | |
| C478 | — | — | |
| C479 | QFN31HK-223 | MY Cap | |
| C480 | " -223 | " | |
| C481 | QET61HM-474 | E Cap | |
| C482 | QET61CM-226 | " | |
| C483 | QFN31HK-152 | MY Cap | |
| C484 | QET61HM-105 | E Cap | |
| C485 | QFN31HK-103 | MY Cap | |
| C486 | QFP42AJ-152 | " | |
| C487 | " -102 | " | |
| C488 | " -392 | " | |
| C489 | — | — | |
| C490 | QFN31HK-102 | MY Cap | |
| C491 | " -103 | " | |
| C492 | QCS31HJ-470 | C Cap | |
| C493 | QFN31HK-273 | MY Cap | |
| C494 | QET41CM-226 | E Cap | |
| C495 | QFN31HK-683 | MY Cap | |
| C496 | QEN41CM-106 | NP E Cap | |
| C497 | QEN41HM-474 | " | |
| C498 | QEN61HM-105 | " | |
| C499 | " -105 | " | |
| C500 | QFN31HK-223 | MY Cap | |
| C501 | QET61CM-476 | E Cap | |
| C502 | QFN31HK-222 | MY Cap | |
| C503 | QEK61CM-106 | E Cap | |

## [A/Servo/M]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L401 | PU53618-101J | Peaking Coil | |
| L402 | " -101J | " | |
| L403 | " -101J | " | |
| X401 | PU47701 | Crystal | |
| CF401 | PU55812 | C. Resonator | |
| CF402 | " | " | |
| CN401 | PU49215-2 | Cap. Housing | |
| CN402 | " -2 | " | |
| CN403 | " -2 | " | |
| CN404 | " -6 | " | |
| CN405 | " -2 | " | |
| CN406 | " -8 | " | |
| CN407 | " -4 | " | |
| CN408 | – | – | |
| CN409 | PU49215-7 | Cap. Housing | |
| RA401 | RGLD6X474M | Resistor Array | |
| | PU55774 | Test Point | |
| | PQ10037-2 | Jack Board | |
| | SDSF3008Z | Tap. Screw | |
| | PU55778 | Hinge | |
| | PQ40404 | Dust Spacer | |
| | PQ40378 | Spacer | |

## [A/S/Mechacon]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| **[Mechacon Section]** | | | |
| IC201 | LM339N | Integrated Circuit | or UPC339C |
| IC202 | M50740-606SP | " | |
| IC203 | M54519P | " | or UPA81C |
| IC204 | M50790SP | " | |
| ⚠ IC205 | BA6209U1 | " | |
| ⚠ IC206 | " | " | |
| IC207 | UPC1373H | " | |
| Q201 | – | – | |
| Q202 | 2SD636R,S | Transistor | |
| Q203 | DTC124F | D. Transistor | |
| Q204 | 2SB641R,S | Transistor | |
| ⚠ Q205 | 2SD637R,S | " | |
| Q206 | DTC144F | D. Transistor | |
| Q207 | 2SD636R,S | Transistor | |
| Q208 | 2SD1055Q,R,S | " | |
| Q209 | DTC124F | D. Transistor | |
| Q210 | " | " | |
| Q211 | DTA124F | " | |
| Q212 | 2SD636R,S | Transistor | |
| Q213 | " | " | |
| Q214 | DTA124F | D. Transistor | |
| D201 | RD7.5EB2 | Zener Diode | |
| D202 | 1SS133 | Diode | |
| D203 | RD3.0EB2 | Zener Diode | |
| D204 | RD7.5EB1 | " | |
| D205 | 1SS133 | Diode | |
| D206 | " | " | |
| D207 | " | " | |
| D208 | – | – | |
| D209 | 1SS133 | Diode | |
| D210 | RD8.2EB2 | Zener Diode | |
| D211 | 1SS133 | Diode | |
| D212 | " | " | |
| D213 | " | " | |
| D214 | RD10EB2 | Zener Diode | |
| ⚠ D215 | RD13EB1 | " | or TZ12A |
| ⚠ D216 | RD12EB2 | " | |
| D217 | 1SS133 | Diode | |
| D218 | " | " | |
| D219 | " | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| D220 | 1SS133 | Diode | |
| D221 | " | " | |
| D222 | PD48PI2 | Photo Transistor | |
| ⚠D223 | RD15EB1 | Zener Diode | |
| D224 | 1SS133 | Diode | |
| D225 | " | " | |
| D226 | " | " | |
| D227 | " | " | |
| ⚠D228 | 10E2 | Zener Diode | |
| D229 | 1SS133 | Diode | |
| D230 | " | " | |
| D231 | " | " | |
| D232 | " | " | |
| D233 | " | " | |
| D234 | — | — | |
| D235 | — | — | |
| D236 | — | — | |
| D237 | 1SS133 | Diode | |
| D238 | RD13EB1 | Zener Diode | |
| D239 | MA26W | Diode | |
| D240 | — | — | |
| | | | |
| D244 | 1SS133 | Diode | |
| D245 | " | " | |
| D246 | — | — | |
| D247 | 1SS133 | Diode | |
| | | | |
| DA201 | DAP-201 | Diode Array | |
| DA202 | DAN-201 | " | |
| | | | |
| R201 | QRD161J-102 | CR | |
| R202 | " -103 | " | |
| R203 | " -102 | " | |
| R204 | — | — | |
| R205 | QRD162J-104 | CR | |
| R206 | " -104 | " | |
| R207 | " -104 | " | |
| R208 | QRD161J-184 | " | |
| R209 | " -274 | " | |
| R210 | " -103 | " | |
| R211 | " -104 | " | |
| R212 | " -104 | " | |
| R213 | " -274 | " | |
| R214 | " -104 | " | |
| R215 | " -472 | " | |
| R216 | " -472 | " | |
| R217 | " -472 | " | |
| R218 | " -473 | " | |
| R219 | " -473 | " | |
| R220 | — | — | |
| R221 | — | — | |
| R222 | QRD161J-472 | CR | |
| R223 | " -472 | " | |
| R224 | " -472 | " | |
| R225 | " -472 | " | |
| R226 | " -103 | " | |
| R227 | " -472 | " | |
| R228 | " -105 | " | |
| R229 | " -103 | " | |
| R230 | " -103 | " | |
| R231 | " -103 | " | |
| R232 | " -473 | " | |
| R233 | " -103 | " | |
| R234 | " -103 | " | |
| R235 | " -472 | " | |
| R236 | " -103 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R237 | QRD161J-472 | CR | |
| R238 | " -472 | " | |
| R239 | " -101 | " | |
| R240 | " -682 | " | |
| R241 | — | — | |
| R242 | QRD161J-472 | CR | |
| R243 | — | — | |
| R244 | — | — | |
| R245 | QRD161J-472 | CR | |
| R246 | " -472 | " | |
| R247 | " -472 | " | |
| R248 | " -101 | " | |
| R249 | — | — | |
| R250 | — | — | |
| R251 | — | — | |
| R252 | — | — | |
| R253 | — | — | |
| R254 | QRD162J-103 | CR | |
| R255 | QRD161J-223 | " | |
| R256 | — | — | |
| R257 | — | — | |
| R258 | — | — | |
| R259 | — | — | |
| R260 | QRD161J-682 | CR | |
| R261 | " -183 | " | |
| R262 | " -273 | " | |
| R263 | " -103 | " | |
| R264 | " -104 | " | |
| R265 | " -104 | " | |
| R266 | " -104 | " | |
| R267 | " -104 | " | |
| R268 | " -104 | " | |
| R269 | " -472 | " | |
| R270 | " -103 | " | |
| R271 | " -223 | " | |
| R272 | " -222 | " | |
| R273 | — | — | |
| R274 | QRD161J-124 | CR | |
| R275 | " -124 | " | |
| R276 | — | — | |
| R277 | — | — | |
| R278 | — | — | |
| R279 | — | — | |
| R280 | QRD161J-104 | CR | |
| R281 | — | — | |
| R282 | — | — | |
| R283 | — | — | |
| R284 | — | — | |
| R285 | QRD161J-154 | CR | |
| R286 | " -5R6 | " | |
| R287 | " -102 | " | |
| R288 | " -103 | " | |
| R289 | " -104 | " | |
| R290 | " -102 | " | |
| R291 | " -473 | " | |
| R292 | " -104 | " | |
| R293 | " -224 | " | |
| R294 | " -473 | " | |
| R295 | " -274 | " | |
| R296 | " -473 | " | |
| R297 | — | — | |
| R298 | QRD161J-153 | CR | |
| R299 | " -103 | " | |
| R300 | " -682 | " | |
| R301 | " -123 | " | |

**[A/S/Mechacon]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R302 | QRD161J-103 | CR | |
| R303 | ″ -223 | ″ | |
| R304 | ″ -103 | ″ | |
| R314 | QRD161J-104 | CR | |
| R315 | ″ -821 | ″ | |
| R321 | QRD161J-102 | CR | |
| R331 | QRD161J-103 | CR | |
| C201 | — | — | |
| C202 | QEK61HM-105 | E Cap | |
| C203 | QCS31HJ-390 | C Cap | |
| C204 | ″ -390 | ″ | |
| C205 | QEE51CM-475 | T Cap | |
| C206 | QFN31HJ-224 | MY Cap | |
| C207 | QET41EM-475 | E Cap | |
| C208 | QFN31HK-103 | MY Cap | |
| C209 | ″ -103 | ″ | |
| C210 | QET61EM-475 | E Cap | |
| C211 | QFN31HK-103 | MY Cap | |
| C212 | QFN31HJ-683 | ″ | |
| C213 | QEK61AM-476 | E Cap | |
| C214 | QEK61CM-476 | ″ | |
| C215 | QET61HM-225 | ″ | |
| C216 | QEK61CM-336 | ″ | |
| C217 | QEE41EM-225 | T Cap | |
| C218 | QCF31HP-223 | C Cap | |
| C219 | ″ -223 | ″ | |
| C220 | — | — | |
| C221 | — | — | |
| C222 | QFN31HK-103 | MY Cap | |
| C223 | QET41AM-226 | E Cap | |
| C224 | QFZ9011-184 | MY Cap | |
| C225 | QFN31HP-223 | ″ | |
| C226 | QEK61CM-476 | E Cap | |
| C227 | QEE51EM-475 | T Cap | |
| C233 | QCF11HP-473 | C Cap | |
| C234 | QFN31HJ-473 | MY Cap | |
| C235 | ″ -473 | ″ | |
| C236 | ″ -333 | ″ | |
| L201 | PU52612 | Resonator | |
| L202 | — | — | |
| L203 | PU53223-101G | Peaking Coil | |
| L204 | ″ 101G | ″ | |
| L205 | PU53618-101D | Coil | |
| L206 | PU56181-330 | Peaking Coil | |
| L207 | PU53223-1R0G | ″ | |
| CN201 | PU49215-4R | Cap. Housing | |
| CN202 | ″ -4Y | ″ | |
| CN203 | ″ -8 | ″ | |
| CN204 | ″ -4 | ″ | |
| CN205 | — | — | |
| CN206 | — | — | |
| CN207 | — | — | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| CN208 | PU49215-109 | Cap. Housing | |
| CN209 | ″ -4 | ″ | |
| CN210 | ″ -3Y | ″ | |
| CN211 | ″ -4 | ″ | |
| CN212 | ″ -9 | ″ | |
| CN213 | — | — | |
| CN214 | PU49215-107 | Cap. Housing | |
| RA201 | RGLD5X474M | Resistor Array | or EXB-P85474M |
| RA202 | RGLD4X472M | ″ | or EXB-P84472M |
| RA203 | RGLD5X103M | ″ | or EXB-P85103M |
| RA204 | RGLD4X103M | ″ | or EXB-P84103M |
| SW201 | PU55852 | Slide Switch | REMAIN |
| SW202 | PU55852-2 | ″ | MEMORY |
| CF201 | PU56292 | Ceramic Filter | |
| | PU56225 | Shield Cover (1) | IFR |
| | PU56226 | ″ (2) | ″ |
| | PU56772 | ″ (3) | ″ |
| | PU56826 | Dust Cover | |

### 6.2.5 FM Audio (FMA) Circuit Baord Ass'y 0 5

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . PU10867B-3

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | HA11752 | Integrated Circuit | |
| IC 2 | AN6392 | " | |
| IC 3 | TK15021 | " | |
| IC 4 | " | " | |
| IC 5 | TK10322 | " | |
| IC 6 | TK15021 | " | |
| IC 7 | M5218P | " | |
| IC 8 | " | " | |
| IC 9 | TA7324P | " | |
| IC10 | M5218P | " | |
| IC11 | TA7324P | " | |
| IC12 | M5218P | " | |
| IC13 | AN6391S | Flat I.C. | |
| IC14 | " | " | |
| IC15 | EHM-X42U50SZ | Integrated Circuit | |
| | or HA12066MP | " | |
| IC16 | EHM-X42U50SZ | " | |
| | or HA12066MP | " | |
| IC17 | BA226F-T2 | Flat I.C. | |
| IC18 | BA634F-T2 | " | |
| IC19 | M5218P | Integrated Circuit | |
| IC20 | 7VT06 | " | |
| IC21 | " | " | |
| Q 1 | 2SC3053 | Chip Transistor | |
| Q 2 | " | " | |
| Q 3 | " | " | |
| Q 4 | " | " | |
| Q 5 | DTC124F | D. Transistor | |
| Q 6 | " | " | |
| Q 7 | " | " | |
| Q 8 | " | " | |
| Q 9 | 2SC2021R,S | Transistor | |
| Q10 | TA78L005AP | Reg. Transistor | |
| Q11 | DTC124F | D. Transistor | |
| Q12 | 2SD545E,F | Transistor | |
| Q13 | 2SC3053 | Chip Transistor | |
| Q14 | DTC124F | D. Transistor | |
| Q15 | 2SD545E,F | Transistor | |
| Q16 | 2SD639R,S | " | |
| | or 2SD1227M,Q,R | " | |
| | or 2SD1055R,S | " | |
| D 1 | – | – | |
| D 2 | – | – | |
| D 3 | – | – | |
| D 4 | – | – | |
| D 5 | MC2838 | Chip Diode | |
| D 6 | MC2836 | " | |
| D 7 | – | – | |
| D 8 | – | – | |
| D 9 | MC2838 | Chip Diode | |
| D10 | MC2838 | Chip Diode | |
| D11 | – | – | |
| D12 | – | – | |
| D13 | 1SS133 | Diode | |
| | or MA150 | " | |
| D14 | 1SS133 | " | |
| | or MA150 | " | |
| D15 | OA90 | " | |
| D16 | 1SS133 | " | |
| | or MA150 | " | |
| R 1 | QRS188J-272YN | Chip R | |
| R 2 | " -100YN | " | |
| R 3 | " -272YN | " | |
| R 4 | " -272YN | " | |
| R 5 | " -100YN | " | |
| R 6 | " -471YN | " | |
| R 7 | " -471YN | " | |
| R 8 | " -561YN | " | |
| R 9 | " -103YN | " | |
| R10 | " -123YN | " | |
| R11 | " -123YN | " | |
| R12 | " -103YN | " | |
| R13 | " -561YN | " | |
| R14 | " -102YN | " | |
| R15 | – | – | |
| R16 | QRS188J-224YN | Chip R | |
| R17 | " -223YN | " | |
| R18 | " -471YN | " | |
| R19 | " -561YN | " | |
| R20 | " -121YN | " | |
| R21 | " -102YN | " | |
| R22 | " -393YN | " | |
| R23 | " -102YN | " | |
| R24 | QVZ3531-472 | VR | CH-1 E-E |
| R25 | " -472 | " | |
| R26 | QRS188J-823YN | Chip R | |
| R27 | " -124YN | " | |
| R28 | " -823YN | " | |
| R29 | " -124YN | " | |
| R30 | QVZ3531-472 | VR | CH-1 FMA E-E |
| R31 | " -472 | " | CH-2 FMA E-E |
| R32 | QRS188J-123YN | Chip R | |
| R33 | " -123YN | " | |
| R34 | " -473YN | " | |
| R35 | – | – | |
| R36 | QRS188J-183YN | Chip R | |
| R37 | " -473YN | " | |
| R38 | – | – | |
| R39 | QRS188J-183YN | Chip R | |
| R40 | " -123YN | " | |
| R41 | " -124YN | " | |
| R42 | " -123YN | " | |
| R43 | " -124YN | " | |
| R44 | " -222YN | " | |
| R45 | " -222YN | " | |
| R46 | QRD161J-101 | CR | |
| R47 | QRS188J-473YN | Chip R | |
| R48 | " -473YN | " | |
| R49 | " -473YN | " | |
| R50 | " -473YN | " | |
| R51 | " -124YN | " | |
| R52 | " -124YN | " | |

**[FMA]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R53 | QRS188J-222YN | Chip R | |
| R54 | " -472YN | " | |
| R55 | " -472YN | " | |
| R56 | " -222YN | " | |
| R57 | " -124YN | " | |
| R58 | " -124YN | " | |
| R59 | " -222YN | " | |
| R60 | " -222YN | " | |
| R61 | – | – | |
| R62 | QRS188J-124YN | Chip R | |
| R63 | " -103YN | " | |
| R64 | " -272YN | " | |
| R65 | " -124YN | " | |
| R66 | " -124YN | " | |
| R67 | " -272YN | " | |
| R68 | " -103YN | " | |
| R69 | " -124YN | " | |
| R70 | " -122YN | " | |
| R71 | " -223YN | " | |
| R72 | " -332YN | " | |
| R73 | " -124YN | " | |
| R74 | QRD161J-392 | " | |
| R75 | " -392 | " | |
| R76 | QVZ3531-472 | VR | CH-2 LEVEL ADJ. |
| R77 | " -472 | " | CH-1 LEVEL ADJ. |
| R78 | – | – | |
| R79 | – | – | |
| R80 | – | – | |
| R81 | – | – | |
| R82 | QRS188J-124YN | Chip R | |
| R83 | " -124YN | " | |
| R84 | " -392YN | " | |
| R85 | " -392YN | " | |
| R86 | " -124YN | " | |
| R87 | " -124YN | " | |
| R88 | " -392YN | " | |
| R89 | " -392YN | " | |
| R90 | – | – | |
| R91 | QRS188J-102YN | Chip R | |
| R92 | – | – | |
| R93 | QRS188J-102YN | Chip R | |
| R94 | " -122YN | " | |
| R95 | " -223YN | " | |
| R96 | " -332YN | " | |
| R97 | " -124YN | " | |
| R98 | " -102YN | " | |
| R99 | QRD161J-562 | CR | |
| R100 | QRS188J-104YN | Chip R | |
| R101 | " -104YN | " | |
| R102 | " -223YN | " | |
| R103 | " -562YN | " | |
| R104 | " -562YN | " | |
| R105 | " -822YN | " | |
| R106 | " -562YN | " | |
| R107 | " -562YN | " | |
| R108 | QVZ3531-472 | VR | CH-1 REC DEV. |
| R109 | QRS188J-220YN | Chip R | |
| R110 | QRD182J-225 | CR | |
| R111 | QRS188J-333YN | Chip R | |
| R112 | " -183YN | " | |
| R113 | " -562YN | " | |
| R114 | QVZ3531-222 | VR | CARR. ADJ. |
| R115 | QRD182J-392 | CR | |
| R116 | QRS188J-102YN | Chip R | |
| R117 | QVZ3531-102 | VR | 1.3M REC Level |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R118 | – | – | |
| R119 | – | – | |
| R120 | QRS188J-272YN | Chip R | |
| R121 | " -102YN | " | |
| R122 | " -102YN | " | |
| R123 | " -123YN | " | |
| R124 | " -0R0Y | " | |
| R125 | " -102YN | " | |
| R126 | QVZ3531-103 | VR | CH-1 PB Level |
| R127 | QRS188J-102YN | Chip R | |
| R128 | " -102YN | " | |
| R129 | – | – | |
| R130 | QRS188J-102YN | Chip R | |
| R131 | QRD161J-562 | CR | |
| R132 | QRS188J-104YN | Chip R | |
| R133 | " -223YN | " | |
| R134 | " -562YN | " | |
| R135 | " -104YN | " | |
| R136 | " -822YN | " | |
| R137 | QVZ3531-472 | VR | CH-2 REC DEV. |
| R138 | QRS188J-220YN | Chip R | |
| R139 | QRD182J-225 | CR | |
| R140 | QRS188J-333YN | Chip R | |
| R141 | " -183YN | " | |
| R142 | " -562YN | " | |
| R143 | QVZ3531-222 | VR | CH-2 CARR. ADJ. |
| R144 | QRD182J-222 | CR | |
| R145 | QRS188J-102YN | Chip R | |
| R146 | QVZ3531-102 | VR | 1.7M REC Level |
| R147 | – | – | |
| R148 | – | – | |
| R149 | QRS188J-272YN | Chip R | |
| R150 | " -102YN | " | |
| R151 | " -102YN | " | |
| R152 | " -0R0Y | " | |
| R153 | " -102YN | " | |
| R154 | QVZ3531-103 | VR | CH-2 PB Level |
| R155 | QRS188J-102YN | Chip R | |
| R156 | " -104YN | " | |
| R157 | " -103YN | " | |
| R158 | " -472YN | " | |
| R159 | " -102YN | " | |
| R160 | " -104YN | " | |
| R161 | " -103YN | " | |
| R162 | " -472YN | " | |
| R163 | – | – | |
| R164 | – | – | |
| R165 | – | – | |
| R166 | – | – | |
| R167 | – | – | |
| R168 | – | – | |
| R169 | – | – | |
| R170 | – | – | |
| R171 | QRS188J-223YN | Chip R | |
| R172 | PU56787-154 | VR 150 K | CH-2 SW |
| R173 | QRS188J-561YN | Chip R | |
| R174 | " -183YN | " | |
| R175 | PU56787-154 | VR 150 K | CH-1 SW |
| R176 | QRS188J-183YN | Chip R | |
| R177 | " -682YN | " | |
| R178 | QRD161J-122 | CR | |
| R179 | QRS188J-681YN | Chip R | |
| R180 | " -682YN | " | |
| R181 | " -272YN | " | |
| R182 | " -153YN | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R183 | QRS188J-272YN | Chip R | |
| R184 | " -153YN | " | |
| R185 | " -103YN | " | |
| R186 | " -103YN | " | |
| R187 | " -223YN | " | |
| R188 | " -472YN | " | |
| R189 | " -222YN | " | |
| R190 | " -391YN | " | |
| R191 | " -272YN | " | |
| R192 | " -472YN | " | |
| R193 | " -272YN | " | |
| R194 | " -332YN | " | |
| R195 | " -103YN | " | |
| R196 | " -472YN | " | |
| R197 | QRD161J-220 | CR | |
| R198 | — | — | |
| R199 | QRS188J-332YN | Chip R | |
| R200 | " -103YN | " | |
| R201 | " -151YN | " | |
| R202 | — | — | |
| R203 | QRD161J-182 | CR | |
| R204 | QRS188J-124YN | Chip R | |
| R205 | " -682YN | " | |
| R206 | " -124YN | " | |
| R207 | " -183YN | " | |
| R208 | " -183YN | " | |
| R209 | " -124YN | " | |
| R210 | " -221YN | " | |
| R211 | " -682YN | " | |
| R212 | " -124YN | " | |
| R213 | — | — | |
| R214 | QRS188J-822YN | Chip R | |
| R215 | " -822YN | " | |
| R216 | — | — | |
| R217 | QRD161J-123 | CR | |
| R218 | " -123 | " | |
| R219 | QRS188J-104YN | Chip R | |
| R220 | — | — | |
| R221 | — | — | |
| R222 | QRD161J-123 | CR | |
| R223 | QRS188J-104YN | Chip R | |
| R224 | " -104 | " | |
| R225 | QRD161J-103 | CR | |
| R226 | " -152 | " | |
| R227 | QRS188J-102 | Chip R | |
| R228 | " -102 | " | |
| R229 | QRD161J-222 | CR | |
| R230 | " -392 | " | |
| R231 | " -392 | " | |
| R232 | " -103 | " | |
| R233 | " -103 | " | |
| R234 | " -821 | " | |
| R235 | " -821 | " | |
| R236 | " -103 | " | |
| R237 | " -103 | " | |
| R238 | — | — | |
| R239 | — | — | |
| R240 | — | — | |
| R241 | QRD161J-0R0 | CR | |
| R242 | " -0R0 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C 1 | QCT81CH-470ZL | Chip Cap | |
| C 2 | QEPA1HM-105 | NP E Cap | |
| C 3 | QCY81HK-223ZL | Chip Cap | |
| C 4 | " -223ZL | " | |
| C 5 | " -223ZL | " | |
| C 6 | " -223ZL | " | |
| C 7 | " -223ZL | " | |
| C 8 | QCT81CH-181ZL | " | |
| C 9 | " -181ZL | " | |
| C10 | QCS81HJ-102ZL | " | |
| C11 | QER41HM-105 | E Cap | |
| C12 | QCS81HJ-102ZL | Chip Cap | |
| C13 | QER41HM-105 | E Cap | |
| C14 | QCY81HK-223ZL | Chip Cap | |
| C15 | QER40JM-336 | E Cap | |
| C16 | QCY81HK-223ZL | Chip Cap | |
| C17 | QCT81CH-331ZL | " | |
| C18 | QER41HM-224 | E Cap | |
| C19 | QER40JM-336 | " | |
| C20 | QCY81HK-223ZL | Chip Cap | |
| C21 | QER40JM-336 | E Cap | |
| C22 | QCY81EK-223ZL | Chip Cap | |
| C23 | " -223ZL | " | |
| C24 | " -223ZL | " | |
| C25 | QCT81CH-270ZL | " | |
| C26 | QER41HM-105 | E Cap | |
| C27 | QCY81EK-223ZL | Chip Cap | |
| C28 | " -223ZL | " | |
| C29 | QER41CM-226 | E Cap | |
| C30 | QCS81HJ-102ZL | Chip Cap | |
| C31 | QER41EM-475 | E Cap | |
| C32 | " -475 | " | |
| C33 | " -475 | " | |
| C34 | " -475 | " | |
| C35 | " -475 | " | |
| C36 | " -475 | " | |
| C37 | " -475 | " | |
| C38 | " -475 | " | |
| C39 | " -475 | " | |
| C40 | " -475 | " | |
| C41 | " -475 | " | |
| C42 | " -475 | " | |
| C43 | " -475 | " | |
| C44 | " -475 | " | |
| C45 | " -475 | " | |
| C46 | " -475 | " | |
| C47 | " -475 | " | |
| C48 | " -475 | " | |
| C49 | QER40JM-226 | " | |
| C50 | " -226 | " | |
| C51 | QER41CM-476 | " | |
| C52 | QER41HM-105 | " | |
| C53 | QCY81HK-562ZL | Chip Cap | |
| C54 | QEPA1EM-475 | NP E Cap | |
| C55 | QER41HM-105 | E Cap | |
| C56 | QCY81HK-562ZL | Chip Cap | |
| C57 | QEPA1EM-475 | NP E Cap | |
| C58 | QER41HM-105 | E Cap | |
| C59 | QER41EM-475 | " | |
| C60 | " -475 | " | |
| C61 | QER41HM-105 | " | |
| C62 | QER41CM-476 | " | |
| C63 | QER40JM-226 | " | |
| C64 | QER41CM-226 | " | |
| C65 | " -226 | " | |

## [FMA]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C66 | QER40JM-226 | E Cap | |
| C67 | — | — | |
| C68 | — | — | |
| C69 | — | — | |
| C70 | — | — | |
| C71 | QER41EM-475 | E Cap | |
| C72 | " -475 | " | |
| C73 | QER40JM-107 | " | |
| C74 | QER41EM-475 | " | |
| C75 | QER40JM-107 | " | |
| C76 | QER41EM-475 | " | |
| C77 | QER41CM-336 | " | |
| C78 | PU54820G-103 | PP Cap | |
| C79 | QER41CM-106 | E Cap | |
| C80 | " -106 | " | |
| C81 | " -106 | " | |
| C82 | " -106 | " | |
| C83 | " -106 | " | |
| C84 | " -106 | " | |
| C85 | QEK40JM-107 | " | |
| C86 | QER41EM-475 | " | |
| C87 | QEPA1EM-475 | NP E Cap | |
| C88 | QCT81CH-101ZL | Chip Cap | |
| C89 | QFN31HJ-102 | MY Cap | |
| C90 | QCY81HK-223ZL | Chip Cap | |
| C91 | QCT81CH-820ZL | " | |
| C92 | QCY81HK-223ZL | " | |
| C93 | QCT81CH-101ZL | " | |
| C94 | — | — | |
| C95 | QCY81HK-223ZL | Chip Cap | |
| C96 | QEPA1EM-475 | NP E Cap | |
| C97 | QER40JM-476 | E Cap | |
| C98 | QER41CM-106 | " | |
| C99 | PU54820G-103 | PP Cap | |
| C100 | QCY81HK-562ZL | Chip Cap | |
| C101 | QER41CM-106 | E Cap | |
| C102 | QER40JM-476 | " | |
| C103 | QCT81CH-101ZL | Chip Cap | |
| C104 | QCF81EP-334ZL | " | |
| C105 | QER41JM-336 | E Cap | |
| C106 | QCS81HJ-332ZL | Chip Cap | |
| C107 | — | — | |
| C108 | QER40JM-476 | E Cap | |
| C109 | PU54820G-103 | PP Cap | |
| C110 | QER41CM-106 | E Cap | |
| C111 | " -106 | " | |
| C112 | " -106 | " | |
| C113 | QEPA1EM-475 | NP E Cap | |
| C114 | QER41CM-106 | E Cap | |
| C115 | QER40JM-107 | " | |
| C116 | QER41EM-475 | " | |
| C117 | QEPA1EM-475 | NP E Cap | |
| C118 | QCT81CH-101ZL | Chip Cap | |
| C119 | QFN31HJ-102 | MY Cap | |
| C120 | QCY81HK-223ZL | Chip Cap | |
| C121 | QCT81CH-820ZL | " | |
| C122 | QCY81EK-223ZL | " | |
| C123 | QCS81HJ-102ZL | " | |
| C124 | QCT81CH-101ZL | " | |
| C125 | — | — | |
| C126 | QCY81EK-223ZL | Chip Cap | |
| C127 | QER40JM-476 | E Cap | |
| C128 | QER41CM-106 | " | |
| C129 | PU54820G-103 | PP Cap | |
| C130 | QCY81HK-562ZL | Chip Cap | |
| C131 | QER41CM-106 | E Cap | |
| C132 | QER40JM-476 | " | |
| C133 | QCS81HJ-332ZL | Chip Cap | |
| C134 | QCT81CH-101ZL | " | |
| C135 | QCF81EP-334ZL | " | |
| C136 | QER40JM-336 | E Cap | |
| C137 | QER40JM-476 | " | |
| C138 | — | — | |
| C139 | QFZ9011-104 | MP Cap | |
| C140 | QER41CM-226 | E Cap | |
| C141 | QFZ9011-104 | MP Cap | |
| C142 | QCS81HJ-102ZL | Chip Cap | |
| C143 | " -102ZL | " | |
| C144 | QER41CM-476 | E Cap | |
| C145 | " -106 | " | |
| C146 | " -106 | " | |
| C147 | QCT81CH-820ZL | Chip Cap | |
| C148 | QCY81HK-223ZL | " | |
| C149 | QER41CM-106 | E Cap | |
| C150 | " -106 | " | |
| C151 | " -106 | " | |
| C152 | " -106 | " | |
| C153 | " -476 | " | |
| C154 | " -476 | " | |
| C155 | QER40JM-336 | " | |
| C156 | " -336 | " | |
| C157 | QER41CM-226 | " | |
| C158 | QER40JM-336 | " | |
| C159 | " -336 | " | |
| C160 | QCT81CH-101ZL | Chip Cap | |
| C161 | " -101ZL | " | |
| C162 | QER41CM-106 | E Cap | |
| C163 | " -106 | " | |
| C164 | QFN41HJ-103 | MY Cap | |
| C165 | " -103 | " | |
| C166 | " -103 | " | |
| C167 | QER41EM-475 | E Cap | |
| C168 | " -475 | " | |
| C169 | — | — | |
| C170 | QCF11HP-223 | C Cap | |
| L 1 | PU53223-101J | Peaking Coil | |
| L 2 | " -221J | " | |
| L 3 | " -101J | " | |
| L 4 | " -101J | " | |
| L 5 | " -101J | " | |
| L 6 | " -101J | " | |
| L 7 | — | — | |
| L 8 | PU53607-152 | Coil | |
| L 9 | PU53223-101J | Peaking Coil | |
| L10 | — | — | |
| L11 | PU53607-152 | Coil | |
| T 1 | PU56175 | S. Trans. | |
| T 2 | " | " | |
| T 3 | PU56176 | L.P.F. | |
| T 4 | " | " | |
| T 5 | PU56177 | B.P.F. | |
| T 6 | PU56177-2 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| ⚠ CP 1 | ICP-F10 | IC Protector | |
| ⚠ CP 2 | " | " | |
| ⚠ CP 3 | " | " | |
| TP 1 | PU56008 | Test Pin | |
| TP 2 | " | " | |
| TP 3 | " | " | |
| TP 4 | " | " | |
| TP 5 | " | " | |
| TP 6 | – | – | |
| TP 7 | PU56008 | Test Pin | |
| TP 8 | " | " | |
| TP 9 | " | " | |
| TP10 | " | " | |
| TP11 | " | " | |
| TP12 | " | " | |
| TP13 | – | – | |
| TP14 | – | – | |
| TP15 | PU43192-4 | Binder | |
| J 1 | PU56157 | IC Socket | |
| J 2 | " | " | |
| J 3 | " | " | |
| J 4 | " | " | |
| CN 1 | PU49215-106 | Cap. Housing | |
| CN 2 | " -104 | " | |
| CN 3 | " -105 | " | |
| CN 4 | – | – | |
| CN 5 | PU49215-102 | Cap. Housing | |
| CN 6 | " -104 | " | |
| CN 7 | " -104 | " | |
| CN 8 | " -105 | " | |
| CN 9 | " -106 | " | |
| CN10 | – | – | |
| CN11 | PU49215-106R | Cap. Housing | |
| CN12 | " -103 | " | |
| CN13 | " -104 | " | |
| CN14 | " -104 | " | |
| CN15 | " -104 | " | |
| CN16 | – | – | |
| CN17 | PU49215-103 | Cap. Housing | |
| CN18 | " -105 | " | |
| CN19 | " -104 | " | |
| CN20 | – | – | |
| CN21 | PU49215-102 | Cap. Housing | |
| | PQ40406 | P.W.B. Holder | |
| | SPSP3006Z | Screw | |
| | PU34743 | Shield Case (A) | |
| | PU34744 | Shield Cover | |

### 6.2.6 Operation Board Ass'y [0][6]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| | **Operation (1) Board Ass'y ...... PU21778A1-2** | | |
| D 2 | SLP-981C-50 | LED | |
| D 3 | " | " | |
| D 4 | " | " | |
| D 5 | " | " | |
| D 6 | " | " | |
| R 2 | QRD161J-331 | CR | |
| R 3 | " -102 | " | |
| R 4 | " -331 | " | |
| R 5 | " -331 | " | |
| R 6 | " -331 | " | |
| S 1 | PU53598-2 | Tact Switch | |
| S 2 | QSP2256-001 | Push Switch | |
| S 3 | " -001 | " | |
| S 4 | " -001 | " | |
| | PQ40795 | LED Holder | |
| | **Opertion (2) Board Ass'y ........ PU21778A2-2** | | |
| IC 1 | M50115AP | Integrated Circuit | |
| Q 1 | 2SD636Q,R | Transistor | |
| Q 2 | 2SB641Q,R | " | |
| Q 3 | DTA124F | D. Transistor | |
| D 1 | – | – | |
| D 7 | – | – | |
| D 8 | 1SS133 | Diode | |
| D 9 | " | " | |
| D10 | SLP-981C-50 | L.E.D. | |
| D11 | SEL2213C-CD | " | |
| D12 | SLP-981C-50 | " | |
| D13 | " | " | |
| D14 | SEL2213C-CD | " | |
| D15 | SLP-981C-50 | " | |
| D16 | " | " | |
| D17 | SEL2213C-CD | " | |
| D18 | SEL2413E-CD | " | |
| D19 | SLP-981C-50 | " | |
| D20 | " | " | |
| D21 | " | " | |
| D22 | " | " | |
| D23 | " | " | |
| D24 | " | " | |
| D25 | – | – | |
| D26 | – | – | |
| D27 | RD2.0EC | Zener Diode | |
| D28 | 1SS133 | Diode | |

**[Operation]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R 1 | – | – | |
| R 7 | – | – | |
| R 8 | QRD161J-104 | CR | |
| R 9 | " -471 | " | |
| R10 | " -331 | " | |
| R11 | " -331 | " | |
| R12 | " -331 | " | |
| R13 | " -331 | " | |
| R14 | " -331 | " | |
| R15 | " -331 | " | |
| R16 | " -103 | " | |
| C 1 | QCS11HJ-151 | C Cap | |
| C 2 | " -151 | " | |
| S 5 | PU53598-2 | Tact Switch | |
| S 6 | " -2 | " | |
| S 7 | " -2 | " | |
| S 8 | " -2 | " | |
| S 9 | PU53598 | " | |
| S10 | " | " | |
| S11 | PU53598-2 | " | |
| S12 | " -2 | " | |
| S13 | PU53598 | " | |
| S14 | " | " | |
| S15 | " | " | |
| CF 1 | PU49487-2 | Ceramic Filter | |
| | PQ40386-1-1 | LED Shade | |
| | PU56920 | Search Shade | |
| | PU56692-2 | LED Shade | |
| | PU56691 | LED Spacer | |
| | PU56921-2 | Search Cap | |
| | PU43192-4 | Binder | |

### 6.2.7 Tuner/IF Circuit Board Ass'y [0][7] PU21774B-3

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | AN5135 | Integrated Circuit | |
| IC 2 | UPD1709C-514 | " | |
| IC 3 | LM358P | " | |
| IC 4 | TC4538BP | " | |
| Q 1 | 2SC2636T | Transistor | |
| Q 2 | 2SD1330S | " | |
| Q 3 | – | – | |
| Q 4 | – | – | |
| Q 5 | 2SD1330S | Transistor | |
| Q 6 | 2SD637R,S | " | |
| Q 7 | " | " | |
| Q 8 | " | " | |
| Q 9 | 2SD637R | " | |
| Q10 | 2SB643R,S | " | |
| Q11 | " | " | |
| Q12 | " | " | |
| Q13 | " | " | |
| Q14 | " | " | |
| Q15 | 2SA1020O,Y | " | |
| Q16 | 2SB644R,S | " | |
| Q17 | 2SD639S | " | |
| Q18 | " | " | |
| Q19 | 2SK105F | F.E.T. | |
| Q20 | 2SC2655O,Y | Transistor | |
| Q21 | – | – | |
| Q22 | – | – | |
| Q23 | DTC114F | D. Transistor | |
| Q24 | DTC144F | " | |
| D 1 | – | – | |
| D 2 | 1SS133 | Diode | |
| D 3 | " | " | |
| D 4 | " | " | |
| D 5 | LTZ-R15 | " | |
| D 6 | UPC574J-KL | Integrated Circuit | |
| D 7 | HZ6A2L | Zener Diode | |
| D 8 | – | – | |
| D 9 | 1SS133 | Diode | |
| D10 | " | " | |
| D11 | " | " | |
| D12 | " | " | |
| D13 | " | " | |
| D14 | " | " | |
| D15 | " | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R 1 | QRD161J-750 | CR | |
| R 2 | ″ -331 | ″ | |
| R 3 | ″ -472 | ″ | |
| R 4 | ″ -102 | ″ | |
| R 5 | ″ -470 | ″ | |
| R 6 | ″ -681 | ″ | |
| R 7 | ″ -101 | ″ | |
| R 8 | ″ -220 | ″ | |
| R 9 | ″ -332 | ″ | |
| R10 | ″ -472 | ″ | |
| R11 | QVZ1802-103 | VR | NOISE |
| R12 | QRD161J-472 | CR | |
| R13 | ″ -563 | ″ — | |
| R14 | ″ -561 | ″ | |
| R15 | ″ -470 | ″ | |
| R16 | — | — | |
| R17 | QRD161J-392 | CR | |
| R18 | ″ -271 | ″ | |
| R19 | — | — | |
| R20 | — | — | |
| R21 | QVZ1802-472 | VR | COLOR LEVEL 1 |
| R22 | QRD161J-821 | CR | |
| R23 | ″ -471 | ″ | |
| R24 | ″ -472 | ″ | |
| R25 | — | — | |
| R26 | QRD161J-103 | CR | |
| R27 | QVZ1802-103 | VR | AUDIO LEVEL |
| R28 | — | — | |
| R29 | — | — | |
| R30 | — | — | |
| R31 | — | — | |
| R32 | QRD161J-152 | CR | |
| R33 | ″ -152 | ″ | |
| R34 | QVZ1802-472 | VR | COLOR LEVEL 2 |
| R35 | QRD161J-333 | CR | |
| R36 | ″ -153 | ″ | |
| R37 | ″ -471 | ″ | |
| R38 | ″ -101 | ″ | |
| R39 | PU48530-271J | Coil | |
| R40 | QRD161J-471 | CR | |
| R41 | ″ -334 | ″ | |
| R42 | ″ -103 | ″ | |
| R43 | ″ -470 | ″ | |
| R44 | ″ -223 | ″ | |
| R45 | — | — | |
| R46 | QRD161J-222 | CR | |
| R47 | ″ -103 | ″ | |
| R48 | — | — | |
| R49 | QRD161J-333 | CR | |
| R50 | ″ -333 | ″ | |
| R51 | ″ -333 | ″ | |
| R52 | ″ -333 | ″ | |
| R53 | ″ -333 | ″ | |
| R54 | ″ -103 | ″ | |
| R55 | ″ -274 | ″ | |
| R56 | ″ -224 | ″ | |
| R57 | ″ -471 | ″ | |
| R58 | — | — | |
| R59 | QRD161J-103 | CR | |
| R60 | ″ -103 | ″ | |
| R61 | ″ -103 | ″ | |
| R62 | ″ -103 | ″ | |
| R63 | ″ -274 | ″ | |
| R64 | ″ -473 | ″ | |
| R65 | ″ -102 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R66 | QRD161J-224 | CR | |
| R67 | ″ -105 | ″ | |
| R68 | ″ -104 | ″ | |
| R69 | ″ -103 | ″ | |
| R70 | ″ -103 | ″ | |
| R71 | — | — | |
| R72 | QRD161J-103 | CR | |
| R73 | ″ -222 | ″ | |
| ⚠ R74 | QRZ0054-221 | FR | |
| R75 | QRD181J-473 | CR | |
| R76 | QRD161J-472 | ″ | |
| R77 | — | — | |
| R78 | QRD161J-472 | CR | |
| R79 | ″ -104 | ″ | |
| R80 | ″ -273 | ″ | |
| R81 | ″ -472 | ″ | |
| R82 | ″ -472 | ″ | |
| R83 | ″ -472 | ″ | |
| R84 | — | — | |
| R85 | QRD161J-472 | CR | |
| R86 | ″ -332 | ″ | |
| R87 | ″ -220 | ″ | |
| R88 | ″ -223 | ″ | |
| R89 | ″ -562 | ″ | |
| R90 | ″ -152 | ″ | |
| R91 | ″ -222 | ″ | |
| R92 | ″ -102 | ″ | |
| R93 | — | — | |
| R94 | — | — | |
| R95 | — | — | |
| R96 | QRD161J-103 | CR | |
| R97 | ″ -103 | ″ | |
| R98 | ″ -103 | ″ | |
| R99 | ″ -103 | ″ | |
| R100 | ″ -103 | ″ | |
| R101 | — | — | |
| R102 | — | — | |
| R103 | — | — | |
| R104 | — | — | |
| R105 | — | — | |
| R106 | — | — | |
| R107 | — | — | |
| R108 | QRD161J-104 | CR | |
| R109 | ″ -104 | ″ | |
| R110 | ″ -332 | ″ | |
| R111 | — | — | |
| R112 | QRD161J-564 | CR | |
| R113 | ″ -471 | ″ | |
| R114 | — | — | |
| R115 | — | — | |
| R116 | QRD161J-103 | CR | |
| R117 | ″ -473 | ″ | |
| R118 | ″ -473 | ″ | |
| R119 | ″ -474 | ″ | |
| R120 | ″ -474 | ″ | |
| R121 | ″ -562 | ″ | |
| R122 | ″ -332 | ″ | |
| R123 | ″ -103 | ″ | |
| R124 | ″ -103 | ″ | |
| R125 | ″ -392 | ″ | |
| R126 | ″ -103 | ″ | |
| R127 | ″ -103 | ″ | |
| R128 | ″ -103 | ″ | |
| R129 | ″ -562 | ″ | |
| R130 | ″ -104 | ″ | |

**[Tuner/IF]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C 1 | QCT25CH-151 | C Cap | |
| C 2 | QCY31HK-222 | " | |
| C 3 | QCT25CH-8R0 | " | |
| C 4 | QCT25HH-560 | " | |
| C 5 | QCY31HK-222 | " | |
| C 6 | " -102 | " | |
| C 7 | " -222 | " | |
| C 8 | " -222 | " | |
| C 9 | QET61CM-336 | E Cap | |
| C10 | QCY31HK-222 | C Cap | |
| C11 | QET61HM-474 | E Cap | |
| C12 | QCY31HK-222 | C Cap | |
| C13 | QET61HM-105 | E Cap | |
| C14 | QCF31HP-103 | C Cap | |
| C15 | QCT25PH-820 | " | |
| C16 | QCY31HK-102 | " | |
| C17 | QET61CM-336 | E Cap | |
| C18 | QCY31HK-103 | C Cap | |
| C19 | QET61HM-474 | E Cap | |
| C20 | QCT25CH-120 | C Cap | |
| C21 | — | — | |
| C22 | — | — | |
| C23 | QCS31HJ-180 | C Cap | |
| C24 | QCF31HP-223 | " | |
| C25 | " -223 | " | |
| C26 | QFN31HJ-153 | MY Cap | |
| C27 | QET61HM-105 | E Cap | |
| C28 | QCS31HJ-220 | C Cap | |
| C29 | QET61AM-336 | E Cap | |
| C30 | QET61HM-105 | " | |
| C31 | QCY31HK-103 | C Cap | |
| C32 | QET61CM-107 | E Cap | |
| C33 | QFN31HK-104 | MY Cap | |
| C34 | " -223 | " | |
| C35 | QET61CM-106 | E Cap | |
| C36 | QFN31HK-223 | MY Cap | |
| C37 | QET61HM-475 | E Cap | |
| C38 | QFN31HK-104 | MY Cap | |
| C39 | QCY31HK-102 | C Cap | |
| C40 | QET61CM-336 | E Cap | |
| C41 | QCY31HK-102 | C Cap | |
| C42 | QFN31HJ-332 | MY Cap | |
| C43 | QCT25CH-220 | C Cap | |
| C44 | QAT3001-015 | TR Cap | 4.5 MHz ADJ |
| C45 | QCT25CH-120 | C Cap | |
| C46 | QCY31HK-102 | " | |
| C47 | — | — | |
| C48 | QET61CM-476 | E Cap | |
| C49 | QCS31HJ-101 | C Cap | |
| C50 | QET61HM-106 | E Cap | |
| C51 | QCY31HK-102 | C Cap | |
| C52 | QET61CM-336 | E Cap | |
| C53 | " -106 | " | |
| C54 | QET61HM-225 | " | |
| C55 | QET61CM-106 | " | |
| C56 | " -106 | " | |
| C57 | " -106 | " | |
| C58 | " -106 | " | |
| C59 | — | — | |
| C60 | QEN61HM-105 | NP Cap | |
| C61 | — | — | |
| C62 | QET61CM-106 | E Cap | |
| C63 | QCY31HK-102 | C Cap | |
| C64 | QET61AM-336 | E Cap | |
| C65 | " -336 | " | |
| C66 | QCY31HK-102 | C Cap | |
| C67 | — | — | |
| C68 | — | — | |
| C69 | — | — | |
| C70 | — | — | |
| C71 | — | — | |
| C72 | — | — | |
| C73 | — | — | |
| C74 | QFN31HK-104 | MY Cap | |
| C75 | QET61HM-106 | E Cap | |
| C76 | — | — | |
| C77 | — | — | |
| C78 | — | — | |
| C79 | — | — | |
| C80 | — | — | |
| C81 | QET61HM-105 | E Cap | |
| C82 | — | — | |
| C83 | QEB61HM-335 | E Cap | |
| C84 | " -335 | " | |
| C85 | QCS31HJ-220 | C Cap | |
| C86 | QET61CM-106 | E Cap | |
| C87 | QCS31HJ-270 | C Cap | |
| C88 | QET61CM-226 | E Cap | |
| C89 | QET61HM-225 | " | |
| L 1 | PU53606-R56 | Peaking Coil | |
| L 2 | PU48530-6R8J | " | |
| L 3 | " -6R8J | " | |
| L 4 | " -150J | " | |
| L 5 | " -470J | " | |
| L 6 | " -470J | " | |
| L 7 | " -3R9K | " | |
| L 8 | " -470J | " | |
| L 9 | " -6R8J | " | |
| T 1 | PU55267-2 | I.F.T. | |
| T 2 | PU55955 | " | |
| T 3 | PU56236 | " | |
| T 4 | PU56237 | " | |
| T 5 | PU56238 | " | |
| T 6 | PU51467 | " | |
| CF 1 | PU32990 | Ceramic Cap | |
| CF 2 | PU54493 | Ceramic Filter | |
| SAW 1 | PU32987-2 | Saw Filter | |
| CN 1 | — | — | |
| CN 2 | — | — | |
| CN 3 | PU49215-2 | Cap. Housing | |
| CN 4 | " -2 | " | |
| X 1 | PU56239 | Crystal | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| TP | PU51721 | Test Pin | TP12–14 |
|  | PU51721 | " | TP22 |
|  | PU34545 | Shield Case (1) |  |
|  | PU34546 | Shield Cover (1) |  |
|  | PU34547 | Shield Plate (1) |  |
|  | PU34548 | Shield Case (2) |  |
|  | PU34550 | S. Cover (2)-2 |  |
|  | PU34649 | S. Plate (2)-2 |  |
|  | PU34552 | Shield Case (3) |  |
|  | PU34553 | Shield Cover (3) |  |
|  | PU34554-1-1 | Shield Plate (3) |  |
|  | PQ40990 | Shield Cover (B) |  |
| ⚠ | PU34650 | Tuner |  |

## 6.2.8 Display Circuit Board Ass'y 0 8 PU34658B-2

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| Q 1 | DTC124F | D. Transistor |  |
| D 1 | MA161TA | Diode |  |
| D 2 | " | " |  |
| D 3 | RD7.5EB1 | Zener Diode |  |
| D 4 | – | – |  |
| D 5 | – | – |  |
| D 6 | SLR-34MC12F | L.E.D. |  |
| D 7 | SLP-981C-50 | " |  |
| D 8 | SLR-34YT3 | " |  |
| R 1 | QRD181J-102 | CR |  |
| R 2 | " -102 | " |  |
| R 3 | " -681 | " |  |
| R 4 | PU56214 | VR | Slide VR |
| R 5 | QRD181J-681 | CR |  |
| R 6 | " -681 | " |  |
| R 7 | " -271 | " |  |
| C 1 | QEK51HM-225 | E Cap |  |
| C 2 | " -225 | " |  |
| SW 1 | PU53598 | Tact Switch |  |
| SW 2 | " | " |  |
| SW 3 | " | " |  |
| SW 4 | " | " |  |
| SW 5 | " | " |  |
| SW 6 | QSP2256-001 | Push Switch |  |
| CN 1 | PU51260-12 | Cap. Housing |  |
| CN 2 | " -12 | " |  |
| CN 3 | " -12 | " |  |
| CN 4 | PU49215-6 | " |  |
| CN 5 | " -3 | " |  |
| CN 6 | " -2 | " |  |
|  | PQ40518-1-2 | Fix Plate |  |
|  | LPSP2004Z | Screw |  |
|  | PQ30217-1-1 | Slide Plate |  |
|  | PQ30215-1-2 | Slide Knob (A) |  |
|  | PQ30216-1-2 | " (B) |  |
|  | SPSP2605R | Tap. Screw |  |
|  | PU56056-2 | FDP |  |
|  | PQ40431A-1 | Display Hold. Ass'y |  |
|  | PQ30173-1-1 | (Display Holder | Incl. PQ40431A-1 |
|  | PU50626-7 | Cushion) |  |
|  | PU40795 | LED Holder | (for D6, D8) |
|  | PU56691-2 | LED Spacer | (for " " ) |
|  | PU56692 | LED Shade |  |

## 6.2.9 Tuner/Timer Control Circuit Board Ass'y 0 9 ........................ PU21779A-3

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | UPD7519G-088-36 | Integrated Circuit | |
| IC 2 | TL066CP | " | or UPC4250C |
| IC 3 | MN1219 | " | |
| Q 1 | DTC144F | D. Transistor | |
| Q 2 | " | " | |
| Q 3 | – | – | |
| Q 4 | DTC114YF | D. Transistor | |
| Q 5 | 2SD638R,S | Transistor | |
| Q 6 | " | " | |
| Q 7 | DTC144WF | D. Transistor | |
| Q 8 | DTA124F | " | |
| D 1 | MA161 | Diode | |
| D 2 | " | " | |
| D 3 | " | " | |
| D 4 | " | " | |
| D 5 | " | " | |
| D 6 | – | – | |
| D 7 | – | – | |
| D 8 | MA161 | Diode | |
| D 9 | – | – | |
| D10 | – | – | |
| D11 | – | – | |
| D12 | HZ9A-3 | Zener Diode | |
| D13 | – | – | |
| D14 | HZ7A2L | Zener Diode | |
| D15 | MA150 | Diode | |
| D16 | LTZ-R15 | " | |
| D17 | – | – | |
| D18 | – | – | |
| D19 | HZ6A-1L | Zener Diode | |
| D20 | MA150 | Diode | |
| R 1 | – | – | |
| R 2 | QRD181J-151 | CR | |
| R 3 | – | – | |
| R 4 | – | – | |
| R 5 | QRD181J-222 | CR | |
| R 6 | " -473 | " | |
| R 7 | " -473 | " | |
| R 8 | " -473 | " | |
| R 9 | " -103 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R10 | QRD181J-224 | CR | |
| R11 | " -394 | " | |
| R12 | " -473 | " | |
| R13 | " -564 | " | |
| R14 | " -333 | " | |
| R15 | " -474 | " | |
| R16 | " -684 | " | |
| R17 | " -222 | " | |
| R18 | " -222 | " | |
| R19 | " -222 | " | |
| R20 | " -222 | " | |
| R21 | " -103 | " | |
| R22 | " -103 | " | |
| R23 | " -103 | " | |
| R24 | " -103 | " | |
| R25 | " -103 | " | |
| R26 | " -103 | " | |
| R27 | – | – | |
| R28 | – | – | |
| R29 | QRD181J-102 | CR | |
| R30 | " -102 | " | |
| R31 | " -102 | " | |
| R32 | " -102 | " | |
| R33 | " -103 | " | |
| R34 | " -103 | " | |
| R35 | " -103 | " | |
| R36 | " -103 | " | |
| R37 | " -223 | " | |
| R38 | " -104 | " | |
| R39 | " -333 | " | |
| R40 | " -104 | " | |
| R41 | " -105 | " | |
| R42 | " -273 | " | |
| R43 | " -472 | " | |
| R44 | " -103 | " | |
| R45 | " -103 | " | |
| R46 | " -103 | " | |
| R47 | " -103 | " | |
| R48 | – | – | |
| R49 | QRD161J-103 | CR | |
| C 1 | QCF31HP-223 | C Cap | |
| C 2 | – | – | |
| C 3 | QCF31HP-472 | C Cap | |
| C 4 | QEK41HM-104 | E Cap | |
| C 5 | – | – | |
| C 6 | QAT3001-011 | TR Cap | |
| C 7 | QCS31HJ-5R0 | C Cap | |
| C 8 | " -180 | " | |
| C 9 | QCF31HP-223 | " | |
| C10 | QET61HM-474 | E Cap | |
| C11 | – | – | |
| C12 | PU56230-564 | E Cap | Back-Up |
| C13 | QET60JM-107 | " | |
| C14 | " -107 | " | |
| C15 | QET61HM-225 | " | |
| C16 | QET61CM-336 | " | |
| C17 | QET61VM-336 | " | |
| C18 | QCF31HP-223 | C Cap | |
| C19 | " -223 | " | |
| C20 | " -223 | " | |
| C21 | " -223 | " | |
| C22 | QET61HM-225 | E Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L 1 | PU48530-101K | Peaking Coil | |
| CN 1 | – | – | |
| CN 2 | PU43351-2 | Cap. Housing | |
| CN 3 | PU49215-6 | " | |
| CN 4 | " -8 | " | |
| CN 5 | " -10 | " | |
| CN 6 | " -8 | " | |
| CN 7 | " -3 | " | |
| X 1 | PU47695-2 | Crystal | |
| TP | PU45908-2 | Test Pin | TP1–4 |
| RA 1 | EXB-P84104M | Resistor Array | |
| RA 2 | EXB-P85333M | " | |
| RA 3 | EXB-P86333M | " | |
| RA 4 | " | " | |
| RA 5 | EXB-P812333M | " | |
| RA 6 | " | " | |

### 6.2.10 Terminal Circuit Board Ass'y $\boxed{1}\boxed{0}$. . PU34597A

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| Q 1 | DTC124F | D. Transistor | |
| Q 2 | 2SB911MQ,R | Transistor | |
| D 1 | 1SS133 | Diode | |
| D 2 | – | – | |
| D 3 | 1SS133 | Diode | |
| R 1 | QRD182J-750 | CR | |
| R 2 | – | – | |
| R 3 | QRD182J-102 | CR | |
| R 4 | " -563 | " | |
| R 5 | – | – | |
| R 6 | – | – | |
| R 7 | QRD182J-102 | CR | |
| R 8 | " -102 | " | |
| T 1 | PU51185 | UHF Divider | |
| CN 1 | PU55851 | C. Connector | |
| J 1 | PU56069 | Jack Board Ass'y | |
| | SSSP3010N | Screw | |
| | PU43192-4 | Binder | |

### 6.2.11 RF Switch Circuit Board Ass'y $\boxed{1}\boxed{1}$ . . . . . . . . . . . . . . . . . . . . . . . . . PU21774B2

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| | PU56695 | RF Switch | |
| CN 1 | PU49215-2 | Cap. Housing | |

## 6.2.12 Preamplifier Circuit Board Ass'y 1 6
. . . . . . . . . . . . . . . . . . . . . . . . . . . . PU34595A

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | HA11782 | Integrated Circuit | |
| IC 2 | " | " | |
| Q 1 | 2SC2712Y | Chip Transistor | |
| Q 2 | 2SC2712Y | " | |
| Q 3 | 2SC2712Y | " | |
| Q 4 | 2SC2712Y | " | |
| Q 5 | 2SC2712Y | " | |
| Q 6 | 2SC2712Y | " | |
| Q 7 | 2SC2712Y | " | |
| Q 8 | 2SC2712Y | " | |
| R 1 | QVZ3531-103 | VR | SP. CH. BAL. |
| R 2 | QRS188J-101YN | Chip R | |
| R 3 | " -333YN | " | |
| R 4 | " -103YN | " | |
| R 5 | " -103YN | " | |
| R 6 | " -123YN | " | |
| R 7 | " -123YN | " | |
| R 8 | QVZ3531-682 | VR | CH-1 Q |
| R 9 | " -682 | " | CH-2 Q |
| R10 | QRS188J-122YN | Chip R | |
| R11 | " -122YN | " | |
| R12 | " -122YN | " | |
| R13 | " -122YN | " | |
| R14 | " -3R9YN | " | |
| R15 | " -3R9YN | " | |
| R16 | " -390YN | " | |
| R17 | " -390YN | " | |
| R18 | QVZ3531-103 | VR | EP CH. BAL. |
| R19 | QRS188J-101YN | Chip R | |
| R20 | " -333YN | " | |
| R21 | " -103YN | " | |
| R22 | " -103YN | " | |
| R23 | " -123YN | " | |
| R24 | " -123YN | " | |
| R25 | QVZ3531-682 | VR | CH-2 Q |
| R26 | " -682 | " | CH-1 Q |
| R27 | QRS188J-122YN | Chip R | |
| R28 | " -122YN | " | |
| R29 | " -122YN | " | |
| R30 | " -122YN | " | |
| R31 | " -3R9YN | " | |
| R32 | " -3R9YN | " | |
| R33 | " -390YN | " | |
| R34 | " -390YN | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C 1 | QEK60JM-476 | E Cap | |
| C 2 | " -476 | " | |
| C 3 | QCY81EK-223ZL | Chip Cap | |
| C 4 | " -223ZL | " | |
| C 5 | " -223ZL | " | |
| C 6 | " -223ZL | " | |
| C 7 | " -223ZL | " | |
| C 8 | " -223ZL | " | |
| C 9 | " -223ZL | " | |
| C10 | " -223ZL | " | |
| C11 | PU55357 | TR Cap | |
| C12 | " | " | |
| C13 | QCY81EK-223ZL | Chip Cap | |
| C14 | " -223ZL | " | |
| C15 | " -223ZL | " | |
| C16 | " -223ZL | " | |
| C17 | " -223ZL | " | |
| C18 | " -223ZL | " | |
| C19 | QEK61HM-105 | E Cap | |
| C20 | " -105 | " | |
| C21 | QER40JM-476 | " | |
| C22 | " -476 | " | |
| C23 | QCY81EK-223ZL | Chip Cap | |
| C24 | " -223ZL | " | |
| C25 | " -223ZL | " | |
| C26 | " -223ZL | " | |
| C27 | " -223ZL | " | |
| C28 | " -223ZL | " | |
| C29 | " -223ZL | " | |
| C30 | " -223ZL | " | |
| C31 | PU55357 | TR Cap | CH-2 fo |
| C32 | " | " | CH-1 fo |
| C33 | QCY81EK-223ZL | Chip Cap | |
| C34 | " -223ZL | " | |
| C35 | " -223ZL | " | |
| C36 | " -223ZL | " | |
| C37 | " -223ZL | " | |
| C38 | " -223ZL | " | |
| C39 | QEK61HM-105 | E Cap | |
| C40 | QER41HM-105 | " | |
| C41 | QCY81EK-223ZL | Chip Cap | |
| C42 | " -223ZL | " | |
| C43 | " -223ZL | " | |
| C44 | " -223ZL | " | |
| C45 | " -223ZL | " | |
| C46 | QCS81HJ-220ZL | " | |
| C47 | " -220ZL | " | |
| L 1 | PU53223-101G | Peaking Coil | |
| L 2 | " -101G | " | |
| L 3 | " -101G | " | |
| L 4 | " -101G | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| CN 1 | PU49215-14 | Cap. Housing | |
| CN 2 | " -6 | " | |
| TP | PU45908-2 | Test Pin | TP1–4 |
| B 1 | QRS188J-0R0Y | Chip Resistor | |
| B 2 | " | " | |
| | PQ40304 | Shield Case | |

### 6.2.13 Drum Motor Drive Amplifier (MDA) Circuit Board Ass'y [2][0]. . . . . . . . . . . . . PU34600A

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | AN6671 | Integrated Circuit | |
| ⚠Q 1 | 2SA1020O,Y | Transistor | |
| D 1 | 11DQ04 | Diode | |
| D 2 | 1SS133 | " | |
| R 1 | QRD161J-102 | CR | |
| R 2 | " -105 | " | |
| R 3 | " -105 | " | |
| R 4 | " -222 | " | |
| R 5 | " -222 | " | |
| R 6 | " -102 | " | |
| R 7 | " -102 | " | |
| R 8 | " -223 | " | |
| R 9 | " -473 | " | |
| R10 | " -561 | " | |
| R11 | " -333 | " | |
| R12 | " -682 | " | |
| R13 | " -222 | " | |
| R14 | QRX019J-1R5 | MFR | or QRX016J-1R5 |
| R15 | QRD161J-102 | CR | |
| R16 | " -121 | " | |
| R17 | QRD182J-181 | " | |
| R18 | QRD161J-821 | " | |
| R19 | " -222 | " | |
| C 1 | QET41HM-225 | E Cap | |
| C 2 | QFN31HK-473 | MY Cap | |
| C 3 | " -223 | " | |
| C 4 | " -223 | " | |
| C 5 | QEU61EM-106 | E Cap | |
| C 6 | QEU61HM-225 | " | |
| C 7 | QET41HM-225 | " | |
| C 8 | " -225 | " | |
| C 9 | QEU61EM-107 | " | |
| C10 | " -107 | " | |
| C11 | QFN31HK-223 | MY Cap | |
| C12 | QET41EM-107 | E Cap | |
| C13 | QFZ9011-104 | MM Cap | |
| C14 | " -104 | " | |

**[Drum MDA]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| ⚠L 1 | PU55811-391 | Coil | |
| L 2 | PU49994-120 | " | |
| CN 1 | – | – | |
| CN 2 | PU49215-7 | Cap. Housing | |
| CN 3 | " -2 | " | |
| CN 4 | – | – | |
| CN 5 | PU49215-4 | Cap. Housing | |
| CN 6 | " -2 | " | |
| | PU56222-1-1 | Shield Case Cap | |
| | PU56223-1-1 | Shield Case Side | |
| | PU34651-1-2 | Shield Case Bottom | |

### 6.2.14 Program Circuit Board Ass'y [2][5] PU34638A-1

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| SW 1 | PU53598 | Tact Switch | |
| SW 2 | " | " | |
| SW 3 | " | " | |
| SW 4 | " | " | |
| SW 5 | " | " | |
| SW 6 | " | " | |
| SW 7 | " | " | |
| SW 8 | " | " | |
| SW 9 | " | " | |
| SW10 | " | " | |
| SW11 | " | " | |
| SW12 | " | " | |
| SW13 | " | " | |
| SW14 | " | " | |
| SW15 | – | – | |
| SW16 | PU53598 | Tact Switch | |
| SW17 | " | " | |
| SW18 | – | – | |
| SW19 | – | – | |
| SW20 | – | – | |
| SW21 | QSP2256-004 | Push Switch | |
| SW22 | " -004 | " | |
| SW23 | " -004 | " | |

### 6.2.15 Audio Level Indicator [2][9] . . . . . . . . PU56178

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | BA682AF | IC | |
| IC 2 | ″ | ″ | |
| R 1 | QRS188J-333YN | Chip Resistor | |
| R 2 | ″ -103YN | ″ | |
| R 3 | ″ -473YN | ″ | |
| R 4 | ″ -103YN | ″ | |
| C 1 | QER41CM-106 | E Cap | |
| C 2 | ″ -106 | ″ | |

### 6.2.16 Timing Circuit Board Ass'y [3][2] . . PU56839B

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | UPD4013B,C | IC | |
| IC 2 | ″ | ″ | |
| D 1 | 1SS133 | Diode | |
| D 2 | — | — | |
| D 3 | 1SS133 | Diode | |
| R 1 | QRD167J-123 | CR | |
| R 2 | ″ -103 | ″ | |
| R 3 | ″ -103 | ″ | |
| R 4 | ″ -103 | ″ | |
| R 5 | ″ -103 | ″ | |
| R 6 | ″ -103 | ″ | |
| R 7 | — | — | |
| R 8 | QRD167J-104 | CR | |
| R 9 | ″ -103 | ″ | |
| R10 | ″ -153 | ″ | |
| R11 | ″ -154 | ″ | |
| C 1 | QET61EM-475 | E Cap | |
| C 2 | QET61AM-226 | ″ | |
| CN 1 | PU49215-11 | Cap. Housing | |
| | PU56838 | PWB Bracket | |
| | DPSP3006ZS | Screw | |

### 6.2.17 Remote Control Board Ass'y . . . . PU10882-001

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | M50115AP | Integrated Circuit | |
| Q 1 | 2SB822R | Transistor | |
| Q 2 | 2SC2021R | ″ | |
| Q 3 | ″ | ″ | |
| D 1 | SE303A | LED | |
| D 2 | ″ | ″ | |
| D 3 | SLB-22UR | ″ | |
| D 4 | 1S2473 | Diode | |
| D 5 | ″ | ″ | |
| D 6 | ″ | ″ | |
| D 7 | ″ | ″ | |
| D 8 | ″ | ″ | |
| D 9 | ″ | ″ | |
| D10 | ″ | ″ | |
| D11 | ″ | ″ | |
| D12 | ″ | ″ | |
| D13 | ″ | ″ | |
| D14 | ″ | ″ | |
| D15 | ″ | ″ | |
| R 1 | QRD181J-1R2 | CR | |
| R 2 | ″ -1R2 | ″ | |
| R 3 | ″ -180 | ″ | |
| R 4 | ″ -471 | ″ | |
| R 5 | ″ -470 | ″ | |
| R 6 | ″ -223 | ″ | |
| R 7 | ″ -104 | ″ | |
| R 8 | ″ -474 | ″ | |
| C 1 | QET40JM-107 | E Cap | |
| C 2 | QCF11HP-101 | C Cap | |
| C 3 | ″ -101 | ″ | |
| X 1 | CSB455EB | Ceramic Filter | |
| | PU10882-008 | PC Joiner | |
| | PU10882-009 | Cushion | |

# MODEL HR-D725U

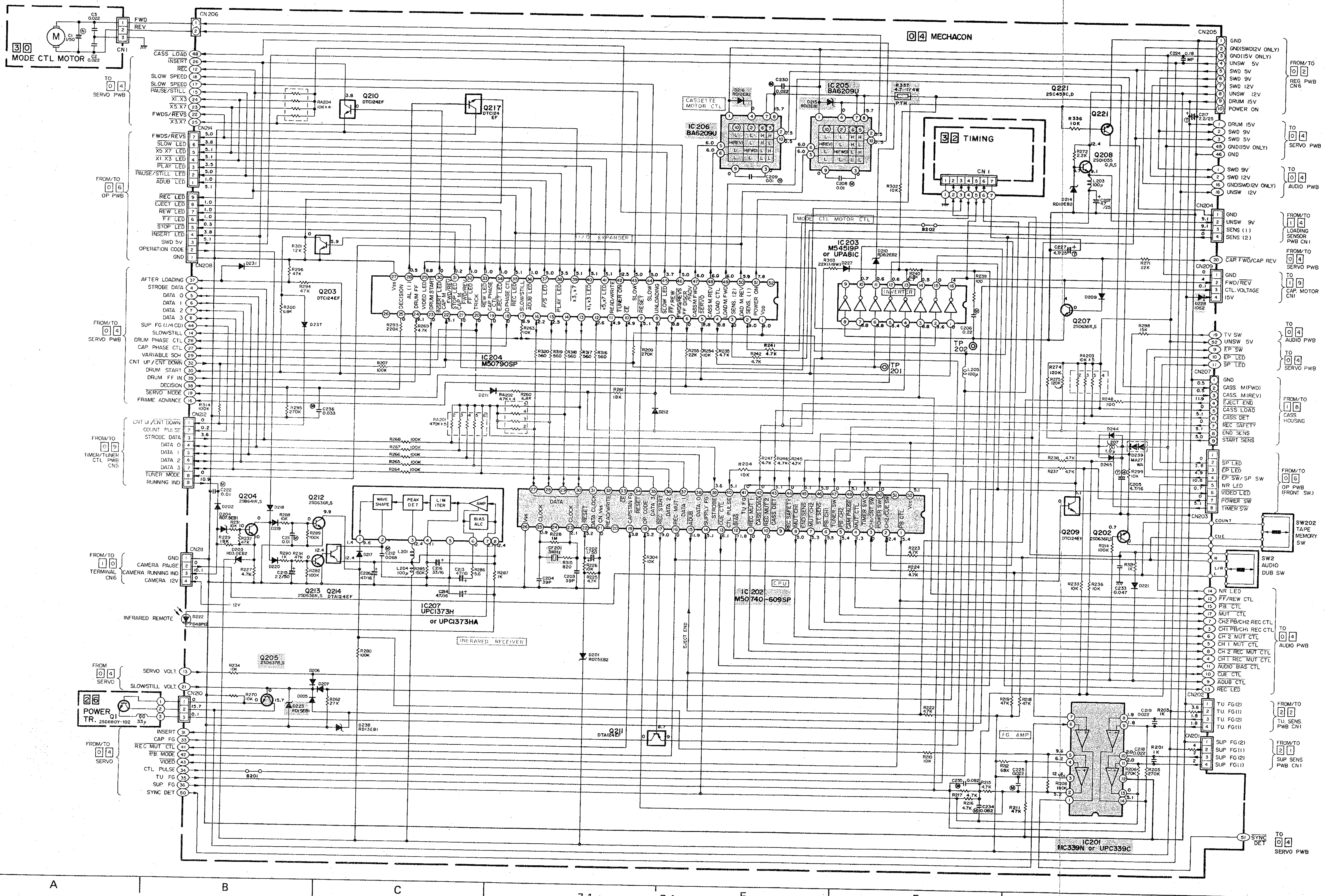
## SECTION 7
## DIAGRAMS AND CIRCUIT BOARDS

- AUDIO/SERVO/MECHACON
- FM AUDIO
- TIMING

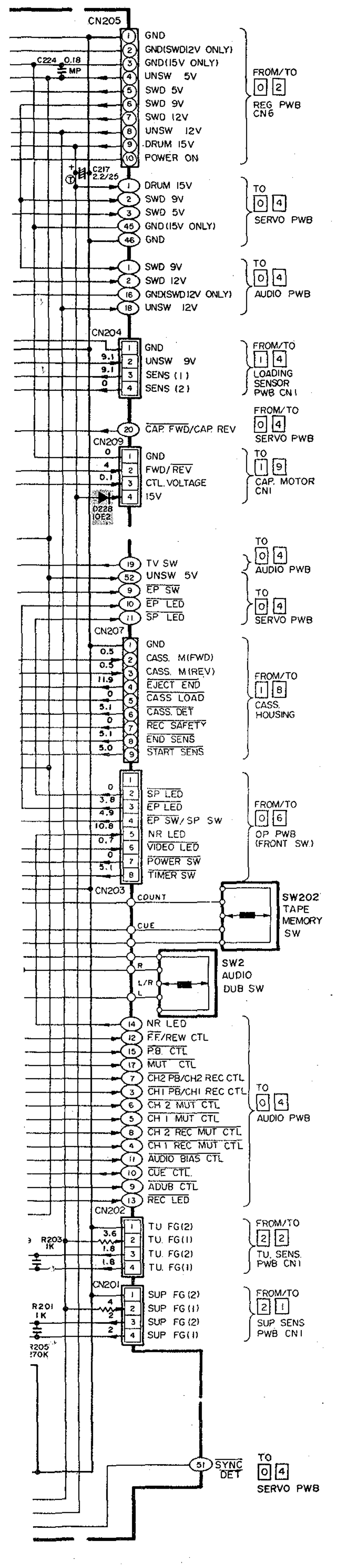
## SECTION 8
## ELECTRICAL PARTS LIST

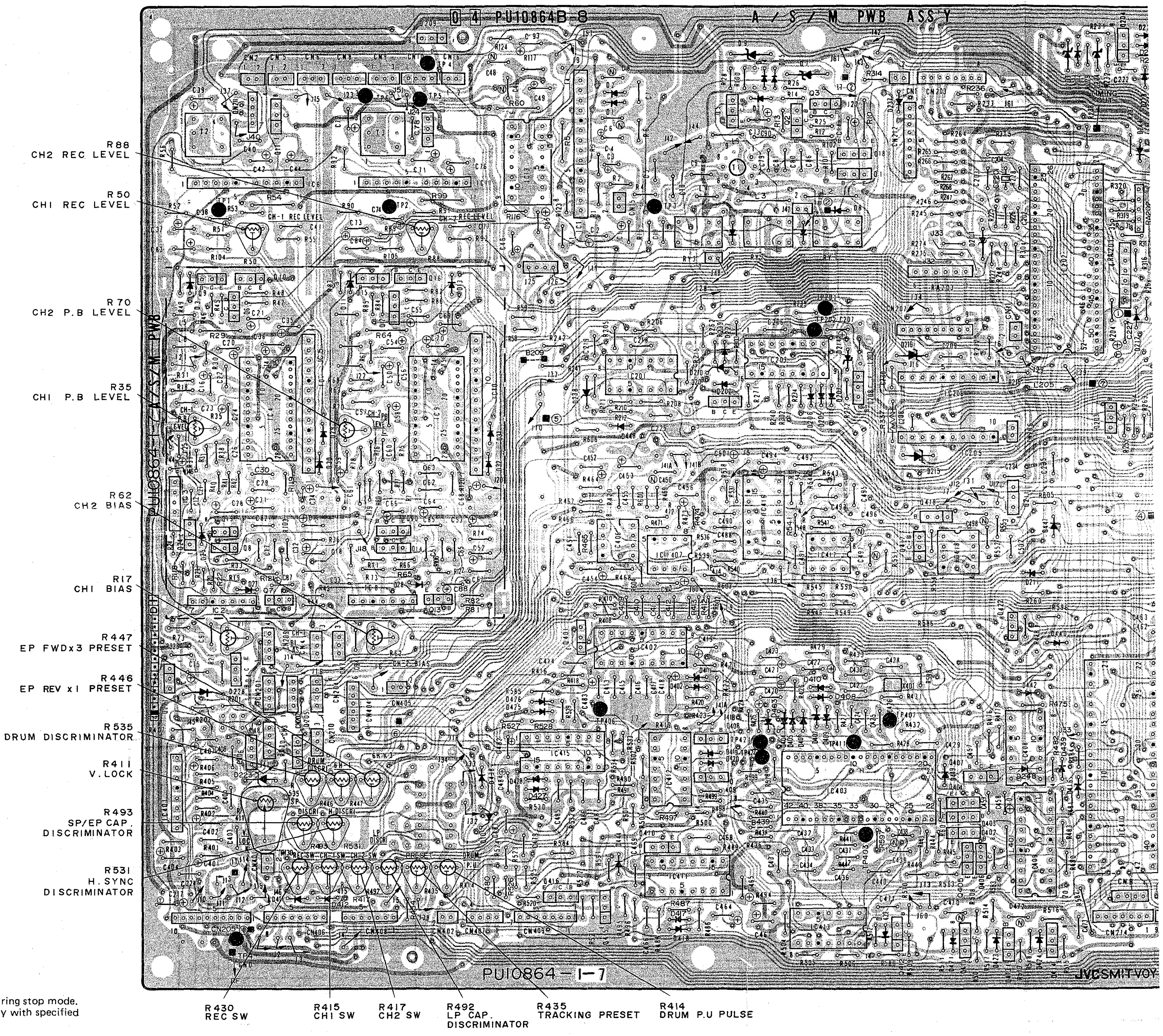
This is an addition to the No. 8321 Service Manual for the model HR-D725U.

## 7.1 MECHANISM CONTROL (A/S/M) SCHEMATIC DIAGRAM


30 MODE CTL MOTOR
FWD
REV
CN1
CN206
04 MECHACON
CN205
TO 04 SERVO PWB
FROM/TO 06 OP PWB
FROM/TO 04 SERVO PWB
FROM/TO 09 TIMER/TUNER CTL PWB CN5
FROM/TO 10 TERMINAL CN6
FROM 04 SERVO
FROM/TO 04 SERVO
26 POWER TR. Q1 2SD880Y-102
CASS LOAD
INSERT
REC
SLOW SPEED
PAUSE/STILL
FWDS/REVS
SLOW LED
PLAY LED
REC LED
EJECT LED
REW LED
FF LED
STOP LED
INSERT LED
OPERATION CODE
AFTER LOADING
STROBE DATA
DATA 0
DATA 1
DATA 2
DATA 3
SUP FG (1/4 CD)
DRUM PHASE CTL
CAP PHASE CTL
VARIABLE SCH
CNT UP/CNT DOWN
DRUM START
DRUM FF IN
DECISION
SERVO MODE
FRAME ADVANCE
COUNT PULSE
TUNER MODE
RUNNING IND
CAMERA PAUSE
CAMERA RUNNING IND
CAMERA 12V
INFRARED REMOTE
D222 PD48PI2
SERVO VOLT
SLOW/STILL VOLT
CAP FG
REC MUT CTL
PB MODE
VIDEO
CTL PULSE
TU FG
SUP FG
SYNC DET
Q210 DTC124EF
Q217 DTC124EF
Q203 DTC124EF
Q204 2SB641R,S
Q212 2SD636R,S
Q213 2SD636R,S
Q214 DTA124EF
Q205 2SD637R,S
Q211 DTA124EF
IC204 M50790SP
IC202 M50740-609SP
CPU
IC207 UPC1373H or UPC1373HA
INFRARED RECEIVER
WAVE SHAPE
PEAK DET
LIMITER
AMP
BIAS ALC
IC206 BA6209U
IC205 BA6209U
CASSETTE MOTOR CTL
IC203 M54519P or UPA81C
INVERTER
F/O EXPANDER
MODE CTL MOTOR CTL
32 TIMING
Q221 2SC458C,D
Q208 2SD1055 Q,R,S
Q207 2SD636R,S
Q209 DTC124EF
Q202 2SD636R,S
IC201 MC339N or UPC339C
FG AMP
TP 202
TP 201
FROM/TO 02 REG PWB CN6
TO 04 SERVO PWB
TO 04 AUDIO PWB
FROM/TO 14 LOADING SENSOR PWB CN1
TO 19 CAP. MOTOR CN1
TO 04 AUDIO PWB
TO 04 SERVO PWB
FROM/TO 18 CASS HOUSING
FROM/TO 06 OP PWB (FRONT SW.)
SW202 TAPE MEMORY SW
SW2 AUDIO DUB SW
TO 04 AUDIO PWB
FROM/TO 22 TU. SENS. PWB CN1
FROM/TO 21 SUP SENS PWB CN1
TO 04 SERVO PWB
GND
UNSW 5V
SWD 5V
SWD 9V
SWD 12V
UNSW 12V
DRUM 15V
POWER ON
CAP FWD/CAP REV
TV SW
EP SW
EP LED
SP LED
CASS M(FWD)
CASS M(REV)
EJECT END
CASS DET
REC SAFETY
END SENS
START SENS
EP SW/SP SW
NR LED
VIDEO LED
POWER SW
TIMER SW
COUNT
CUE
NR LED
FF/REW CTL
P.B. CTL
MUT CTL
AUDIO BIAS CTL
CUE CTL
ADUB CTL
REC LED
TU. FG(2)
TU. FG(1)
SUP FG(2)
SUP FG(1)
SYNC DET
A
B
C
E
F
G
H

NOTES: Unless ot
1. All resistance
2. All inductanc
3. All capacitan
4. All diodes are
5. Voltages are
6. Shaded (
part numbers

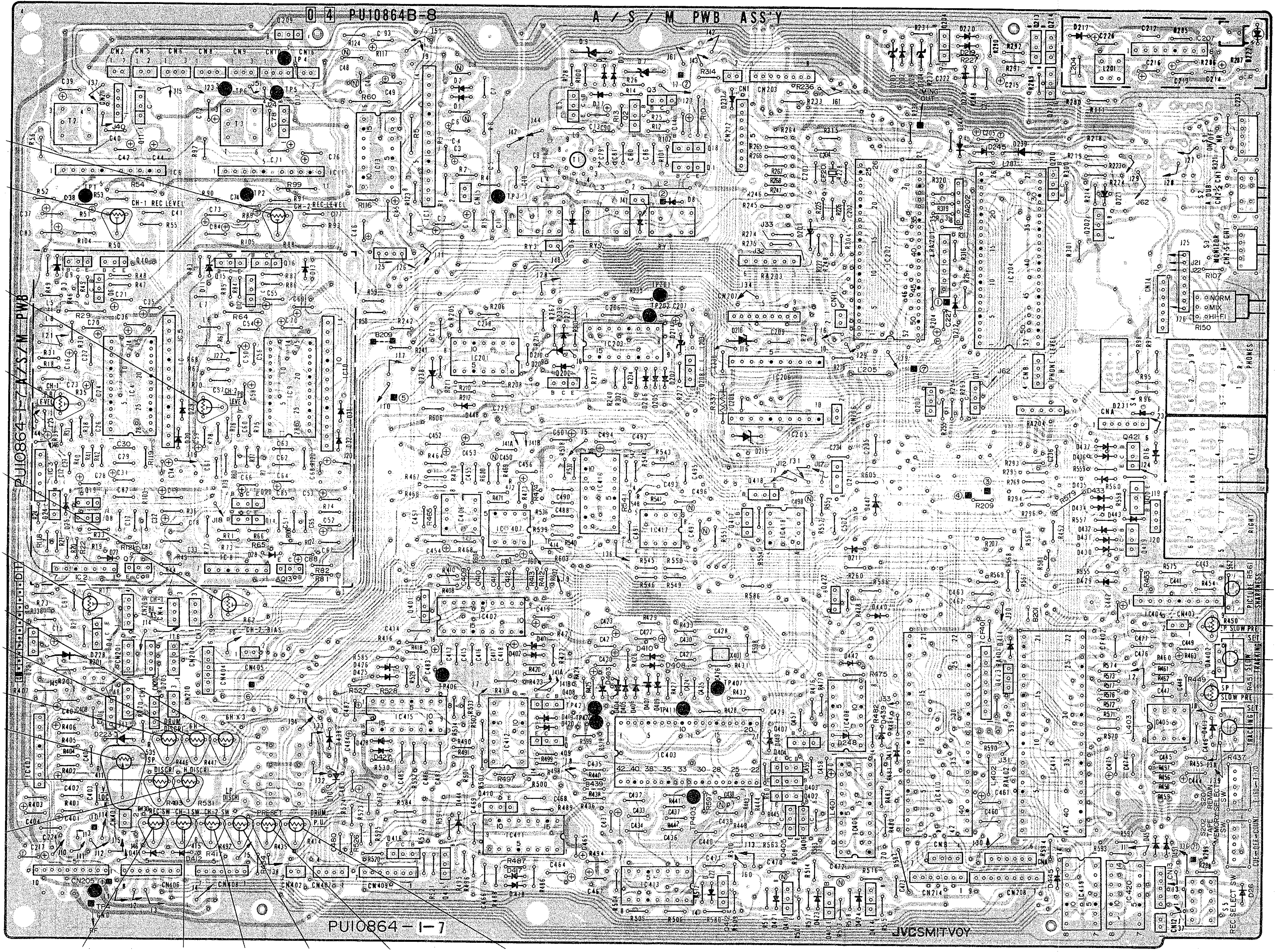

CN205
GND
GND(SWD12V ONLY)
GND(15V ONLY)
UNSW 5V
SWD 5V
SWD 9V
SWD 12V
UNSW 12V
DRUM 15V
POWER ON
C224 0.18 MP
FROM/TO 0 2 REG PWB CN6
C217 2.2/25
DRUM 15V
SWD 9V
SWD 5V
GND(15V ONLY)
GND
TO 0 4 SERVO PWB
SWD 9V
SWD 12V
GND(SWD12V ONLY)
UNSW 12V
TO 0 4 AUDIO PWB
CN204
GND
UNSW 9V
SENS (1)
SENS (2)
FROM/TO 1 4 LOADING SENSOR PWB CN1
CAP. FWD/CAP. REV
FROM/TO 0 4 SERVO PWB
CN209
GND
FWD/REV
CTL. VOLTAGE
15V
D228 10E2
TO 1 9 CAP. MOTOR CN1
TV SW
UNSW 5V
EP SW
EP LED
SP LED
TO 0 4 AUDIO PWB
TO 0 4 SERVO PWB
CN207
GND
CASS. M(FWD)
CASS. M(REV)
EJECT END
CASS LOAD
CASS. DET
REC SAFETY
END SENS
START SENS
FROM/TO 1 8 CASS. HOUSING
SP LED
EP LED
EP SW/SP SW
NR LED
VIDEO LED
POWER SW
TIMER SW
FROM/TO 0 6 OP PWB (FRONT SW)
CN203
COUNT
CUE
SW202 TAPE MEMORY SW
R
L/R
L
SW2 AUDIO DUB SW
NR LED
F.F./REW CTL
P.B. CTL
MUT CTL
CH2 PB/CH2 REC CTL
CH1 PB/CH1 REC CTL
CH 2 MUT CTL
CH 1 MUT CTL
CH 2 REC MUT CTL
CH 1 REC MUT CTL
AUDIO BIAS CTL
CUE CTL
ADUB CTL
REC LED
TO 0 4 AUDIO PWB
CN202
TU. FG(2)
TU. FG(1)
TU. FG(2)
TU. FG(1)
R203 1K
FROM/TO 2 2 TU. SENS. PWB CN1
CN201
SUP FG (2)
SUP FG (1)
SUP FG (2)
SUP FG (1)
R201 1K
R205 270K
FROM/TO 2 1 SUP SENS PWB CN1
SYNC DET
TO 0 4 SERVO PWB


0 4 PU10864B-8
A/S/M PWB ASS'Y
A/S/M PWB
PU10864-1-7
JVC SMIT-VOY
R88 CH2 REC LEVEL
R50 CH1 REC LEVEL
R70 CH2 P.B LEVEL
R35 CH1 P.B LEVEL
R62 CH2 BIAS
R17 CH1 BIAS
R447 EP FWDx3 PRESET
R446 EP REV x1 PRESET
R535 DRUM DISCRIMINATOR
R411 V.LOCK
R493 SP/EP CAP. DISCRIMINATOR
R531 H.SYNC DISCRIMINATOR
R430 REC SW
R415 CH1 SW
R417 CH2 SW
R492 LP CAP. DISCRIMINATOR
R435 TRACKING PRESET
R414 DRUM P.U PULSE
CH-1 REC LEVEL
CH-2 REC LEVEL
CH-2 BIAS
CN205
CN406
CN408
CN402
CN407
CN409
CN214
TP1
TP2
TP3
TP4
TP5
TP6

**NOTES:** Unless otherwise specified.

1. All resistance values are in ohms. (1/6 W).
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. All diodes are 1SS133.
5. Voltages are DC-measured with a digital voltmeter during stop mode.
6. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

H I J K L M N O


PU10864B-8
A / S / M PWB ASS'Y
PU10864-I-7 A/S/M PWB
PU10864-I-7
JVCSMITVOY
TIMING OUT
NORM
MIX
HI-FI
PHONES
LEFT
RIGHT

R88
CH2 REC LEVEL

R50
CH1 REC LEVEL

R70
CH2 P.B LEVEL

R35
CH1 P.B LEVEL

R62
CH2 BIAS

R17
CH1 BIAS

R447
EP FWDx3 PRESET

R446
EP REV x1 PRESET

R535
DRUM DISCRIMINATOR

R411
V.LOCK

R493
SP/EP CAP.
DISCRIMINATOR

R531
H. SYNC
DISCRIMINATOR

R561
PICTURE SHARPNESS

R450
LP/EP SLOW PRESET

R451
SLOW TRACKING

R449
SP SLOW PRESET

R437
TRACKING

R430
REC SW

R415
CH1 SW

R417
CH2 SW

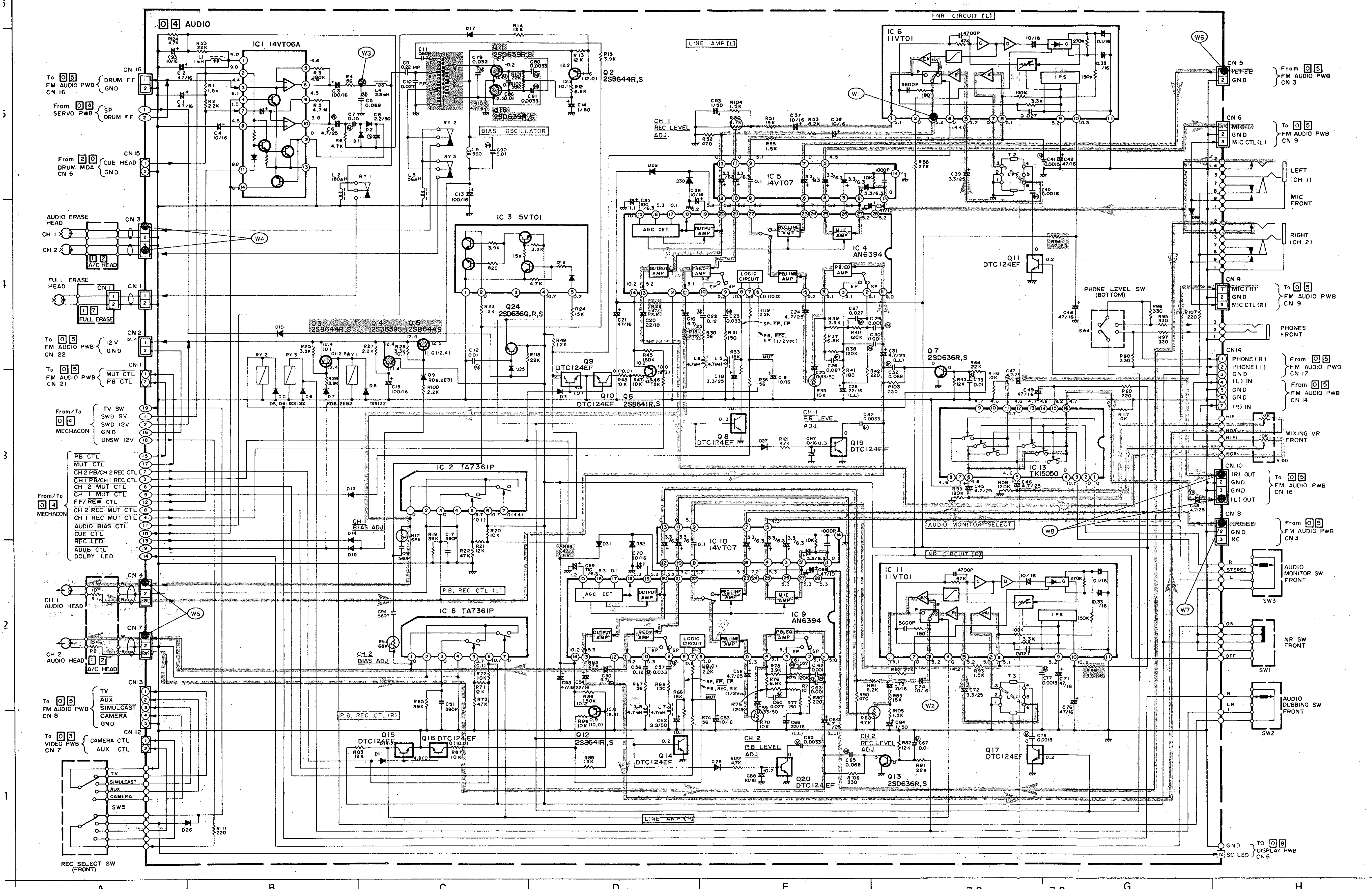
R492
LP CAP.
DISCRIMINATOR

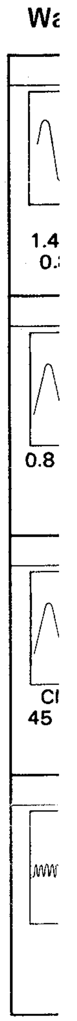
R435
TRACKING PRESET

R414
DRUM P.U PULSE

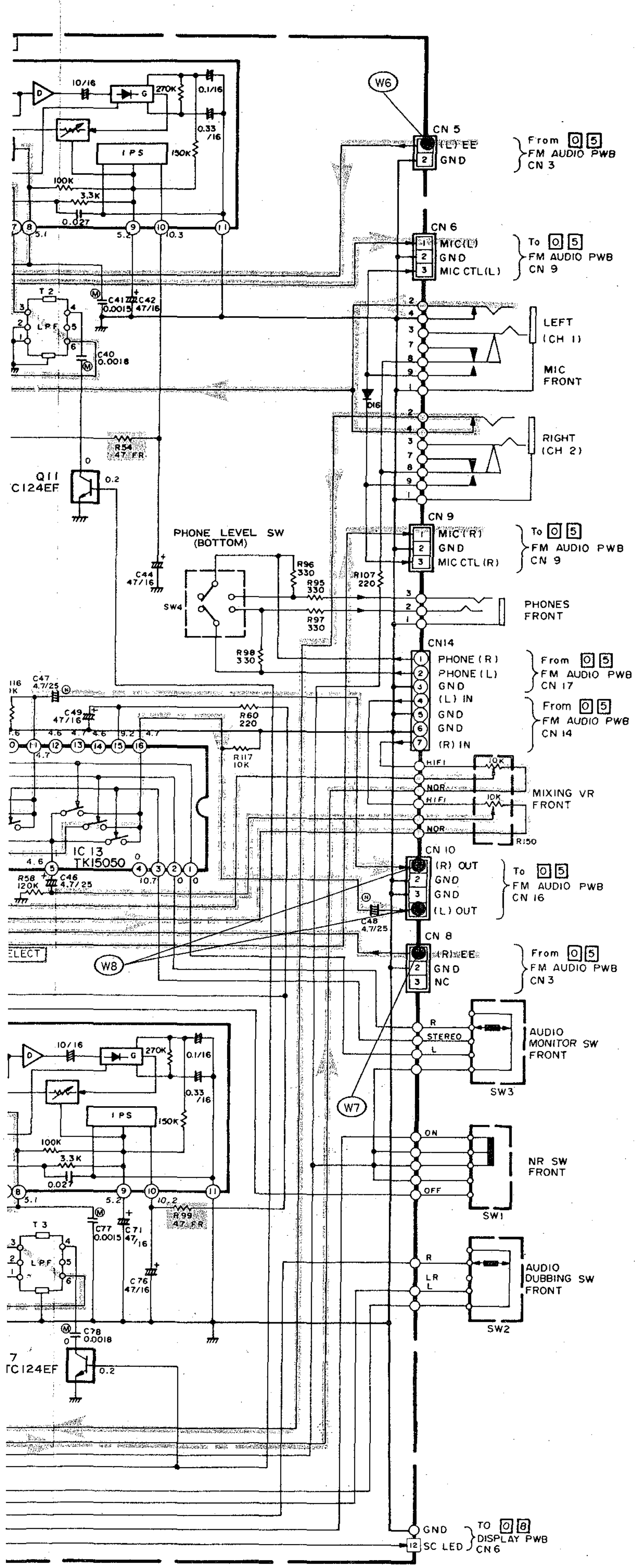
luring stop mode.
nly with specified

## 7.2 AUDIO (A/S/M) SCHEMATIC DIAGRAM

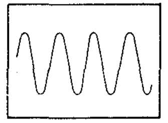
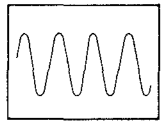
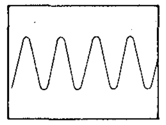
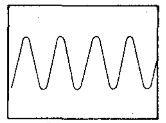
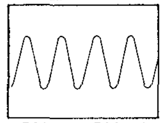
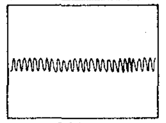
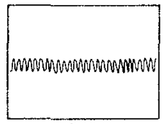
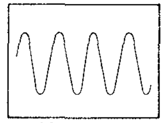

04 AUDIO
IC1 14VT06A
IC2 TA7361P
IC3 5VT01
IC4 AN6394
IC5 14VT07
IC6 11VT01
IC8 TA7361P
IC9 AN6394
IC10 14VT07
IC11 11VT01
IC13 TK15050
Q1 2SD639R,S
Q18 2SD639R,S
Q2 2SB644R,S
Q3 2SB644R,S
Q4 2SD639S
Q5 2SB644S
Q6 2SB641R,S
Q7 2SD636R,S
Q8 DTC124EF
Q9 DTC124EF
Q10 DTC124EF
Q11 DTC124EF
Q12 2SB641R,S
Q13 2SD636R,S
Q14 DTC124EF
Q15 DTC124EF
Q16 DTC124EF
Q17 DTC124EF
Q19 DTC124EF
Q20 DTC124EF
Q24 2SD636Q,R,S
BIAS OSCILLATOR
LINE AMP (L)
LINE AMP (R)
NR CIRCUIT (L)
NR CIRCUIT (R)
AUDIO MONITOR SELECT
CH 1 REC LEVEL ADJ.
CH 2 REC LEVEL ADJ.
CH 1 P.B LEVEL ADJ.
CH 2 P.B LEVEL ADJ.
CH BIAS ADJ
CH 2 BIAS ADJ.
P.B, REC CTL (L)
P.B, REC CTL (R)
AGC DET
OUTPUT AMP
REC/LINE AMP
MIC AMP
REC AMP
LOGIC CIRCUIT
PB/LINE AMP
P.B. EQ AMP
EP
SP
IPS
LPF
To 05 FM AUDIO PWB CN 16
From 04 SERVO PWB
From 20 DRUM MDA CN 6
CUE HEAD
AUDIO ERASE HEAD
CH 1
CH 2
A/C HEAD
FULL ERASE HEAD
FULL ERASE
To 05 FM AUDIO PWB CN 22
To 05 FM AUDIO PWB CN 21
MUT CTL
PB CTL
From/To 04 MECHACON
TV SW
SWD 9V
SWD 12V
UNSW 12V
CH 2 PB/CH 2 REC CTL
CH 1 PB/CH 1 REC CTL
CH 2 MUT CTL
CH 1 MUT CTL
FF/REW CTL
CH 2 REC MUT CTL
CH 1 REC MUT CTL
AUDIO BIAS CTL
CUE CTL
REC LED
ADUB CTL
DOLBY LED
CH 1 AUDIO HEAD
CH 2 AUDIO HEAD
To 05 FM AUDIO PWB CN 8
TV
AUX
SIMULCAST
CAMERA
GND
To 03 VIDEO PWB CN 7
CAMERA CTL
AUX CTL
SW5
REC SELECT SW (FRONT)
W1
W2
W3
W4
W5
W6
W7
W8
From 05 FM AUDIO PWB CN 3
To 05 FM AUDIO PWB CN 9
MIC(L)
MIC CTL(L)
LEFT (CH 1)
MIC FRONT
RIGHT (CH 2)
PHONE LEVEL SW (BOTTOM)
SW4
MIC(R)
MIC CTL(R)
PHONES FRONT
PHONE (R)
PHONE (L)
(L) IN
(R) IN
From 05 FM AUDIO PWB CN 17
From 05 FM AUDIO PWB CN 14
HIFI
NOR
MIXING VR FRONT
(R) OUT
(L) OUT
To 05 FM AUDIO PWB CN 16
STEREO
AUDIO MONITOR SW FRONT
SW3
ON
OFF
NR SW FRONT
SW1
AUDIO DUBBING SW FRONT
SW2
SC LED
TO 08 DISPLAY PWB CN 6
A
B
C
D
E
F
G
H



NOTES: Un
1. All res
2. All inc
3. All cap
4. All dic
5. Shade part n
6. Wavef playba
7. Voltag
8. Where playba


W6
CN 5
(L) EE
GND
From 05 FM AUDIO PWB CN 3
CN 6
MIC(L)
GND
MIC CTL(L)
To 05 FM AUDIO PWB CN 9
LEFT (CH 1)
MIC FRONT
RIGHT (CH 2)
D16
CN 9
MIC (R)
GND
MIC CTL (R)
To 05 FM AUDIO PWB CN 9
PHONES FRONT
PHONE LEVEL SW (BOTTOM)
SW4
CN14
PHONE (R)
PHONE (L)
GND
(L) IN
GND
GND
(R) IN
From 05 FM AUDIO PWB CN 17
From 05 FM AUDIO PWB CN 14
HIFI
NOR
MIXING VR FRONT
R150
IC 13 TK15050
CN 10
(R) OUT
GND
GND
(L) OUT
To 05 FM AUDIO PWB CN 16
W8
CN 8
(R) EE
GND
NC
From 05 FM AUDIO PWB CN 3
R STEREO L
AUDIO MONITOR SW FRONT
SW3
W7
ON
OFF
NR SW FRONT
SW1
R LR L
AUDIO DUBBING SW FRONT
SW2
GND
SC LED
To 08 DISPLAY PWB CN 6
Q11 C124EF
IPS
LPF
T2
T3
C124EF

## Waveforms of audio circuit

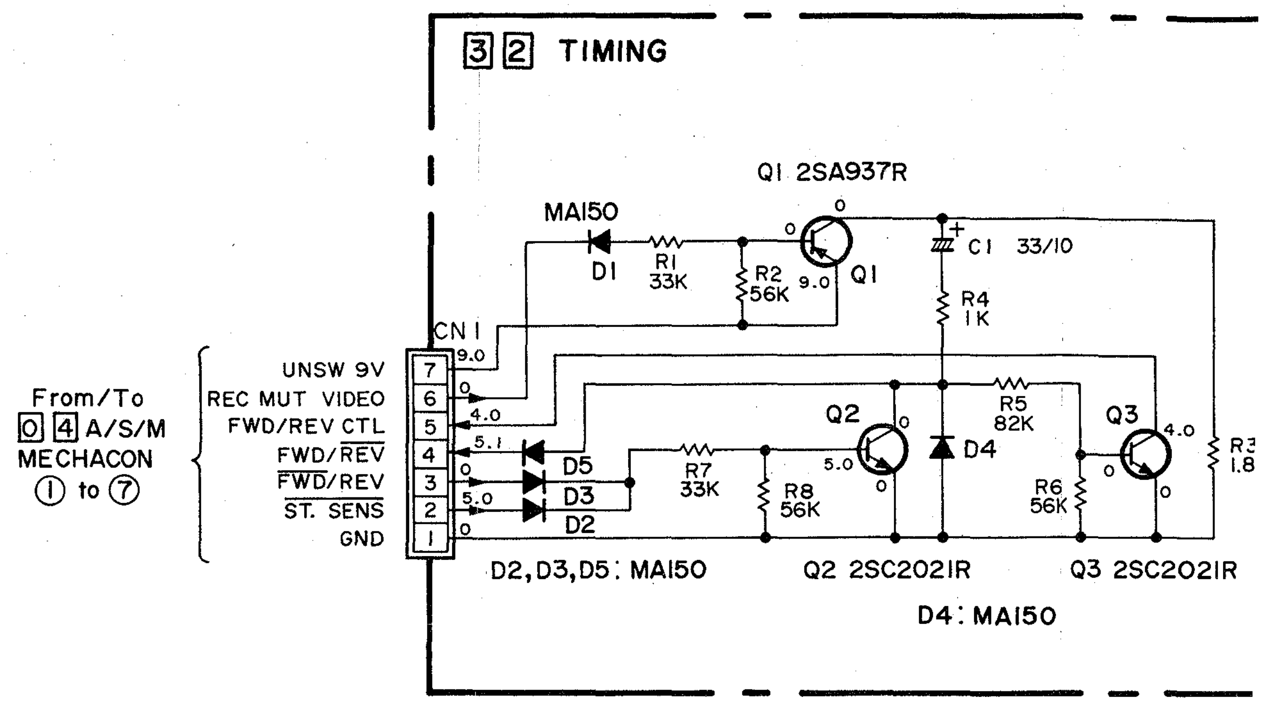
| W1 | W2 |
|---|---|
| <br>IC6-3<br>1.4 Vp-p (REC)<br>0.8 Vp-p (PB) | <br>IC11-3<br>1.4 Vp-p (REC)<br>0.9 Vp-p (PB) |
| **W3** | **W4** |
| <br>0.8 Vp-p, 50 kHz<br>REC | <br>CN3-1, 4<br>12 Vp-p, 50 kHz<br>REC |
| **W5** | **W6** |
| <br>CN4-1, CN7-1<br>45 Vp-p, 50 kHz<br>REC | <br>CN5-1<br>30 mVp-p<br>REC |
| **W7** | **W8** |
| <br>CN8-1<br>25 mVp-p<br>REC | <br>CN10-1, 4<br>1.4 Vp-p (REC)<br>0.8 Vp-p (PB) |

NOTES: Unless otherwise specified.

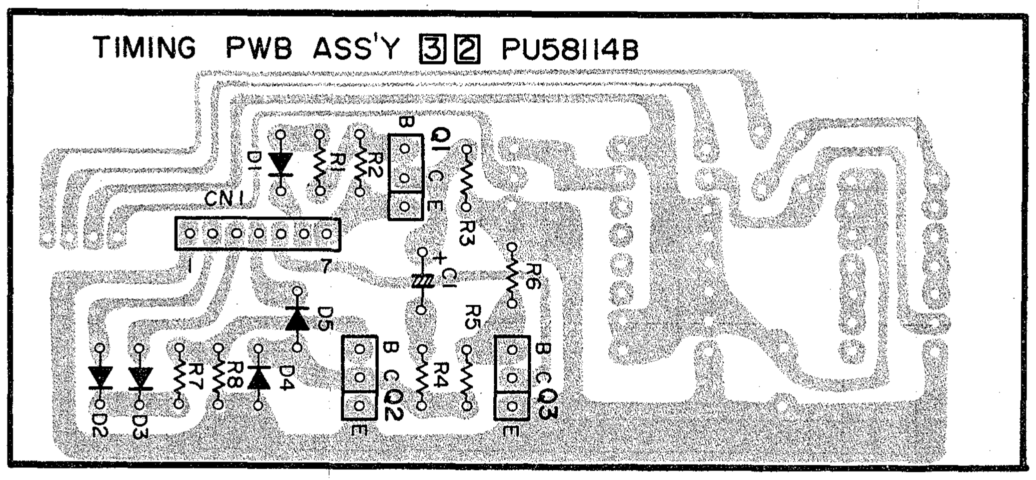
1. All resistance values are in ohms. (1/6 W).
2. All inductance values are in $\mu$H.
3. All capacitance values are in $\mu$F.
4. All diodes are 1SS133.
5. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.
6. Waveforms are measured with 1 kHz (−8dBs) during recording and playback with alignment tape (1 kHz).
7. Voltages are DC-measured with a digital voltmeter during recording mode.
8. Where voltage differs between recording and playback, the voltage during playback is shown in parentheses.

## 7.3 TIMING SCHEMATIC DIAGRAM AND CIRCUIT BOARD

### – TIMING –

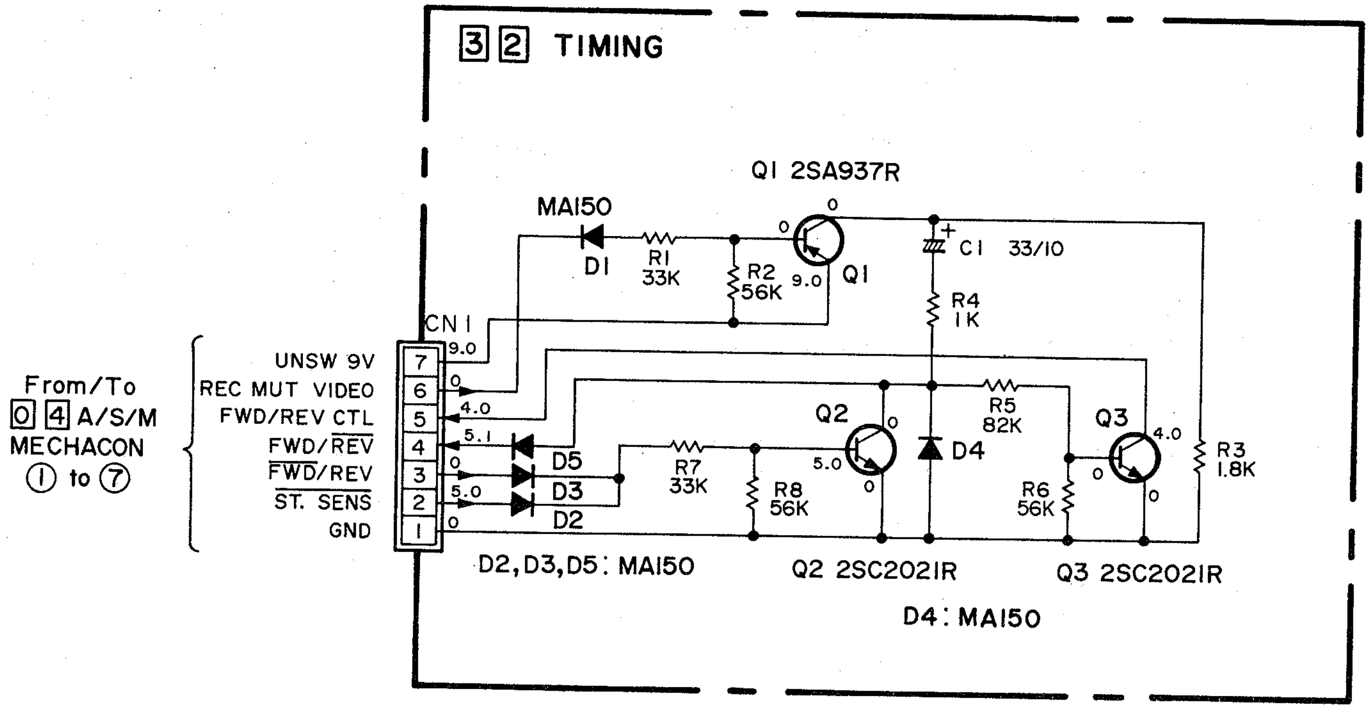

32 TIMING
Q1 2SA937R
MA150
D1
R1 33K
R2 56K
9.0
Q1
C1 33/10
R4 1K
CN 1
9.0
From/To 04 A/S/M MECHACON ① to ⑦
UNSW 9V
REC MUT VIDEO
FWD/REV CTL
FWD/REV
FWD/REV
ST. SENS
GND
7
6
5
4
3
2
1
4.0
5.1
5.0
D5
D3
D2
R7 33K
R8 56K
Q2
D4
R5 82K
R6 56K
Q3
4.0
R3 1.8
D2, D3, D5: MA150
Q2 2SC2021R
Q3 2SC2021R
D4: MA150

### – TIMING BOARD –

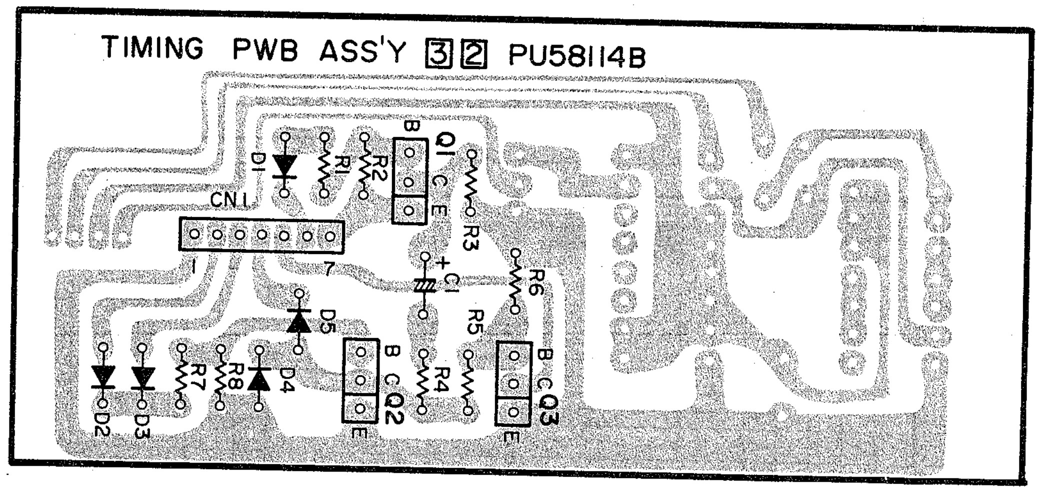

TIMING PWB ASS'Y 32 PU58114B
CN1
1
7
D1
R1
R2
Q1 B C E
R3
C1
R6
R5
D5
D4
R4
R8
R7
D2
D3
Q2 B C E
Q3 B C E

## 7.3 TIMING SCHEMATIC DIAGRAM AND CIRCUIT BOARD

– TIMING –


32 TIMING
Q1 2SA937R
MA150
D1
R1 33K
R2 56K
9.0
Q1
C1 33/10
R4 1K
CN1
From/To
04 A/S/M
MECHACON
① to ⑦
UNSW 9V
REC MUT VIDEO
FWD/REV CTL
FWD/REV
FWD/REV
ST. SENS
GND
7
6
5
4
3
2
1
9.0
4.0
5.1
5.0
D5
D3
D2
R7 33K
R8 56K
Q2
5.0
D4
R5 82K
Q3
4.0
R6 56K
R3 1.8K
D2,D3,D5: MA150
Q2 2SC2021R
Q3 2SC2021R
D4: MA150

– TIMING BOARD –

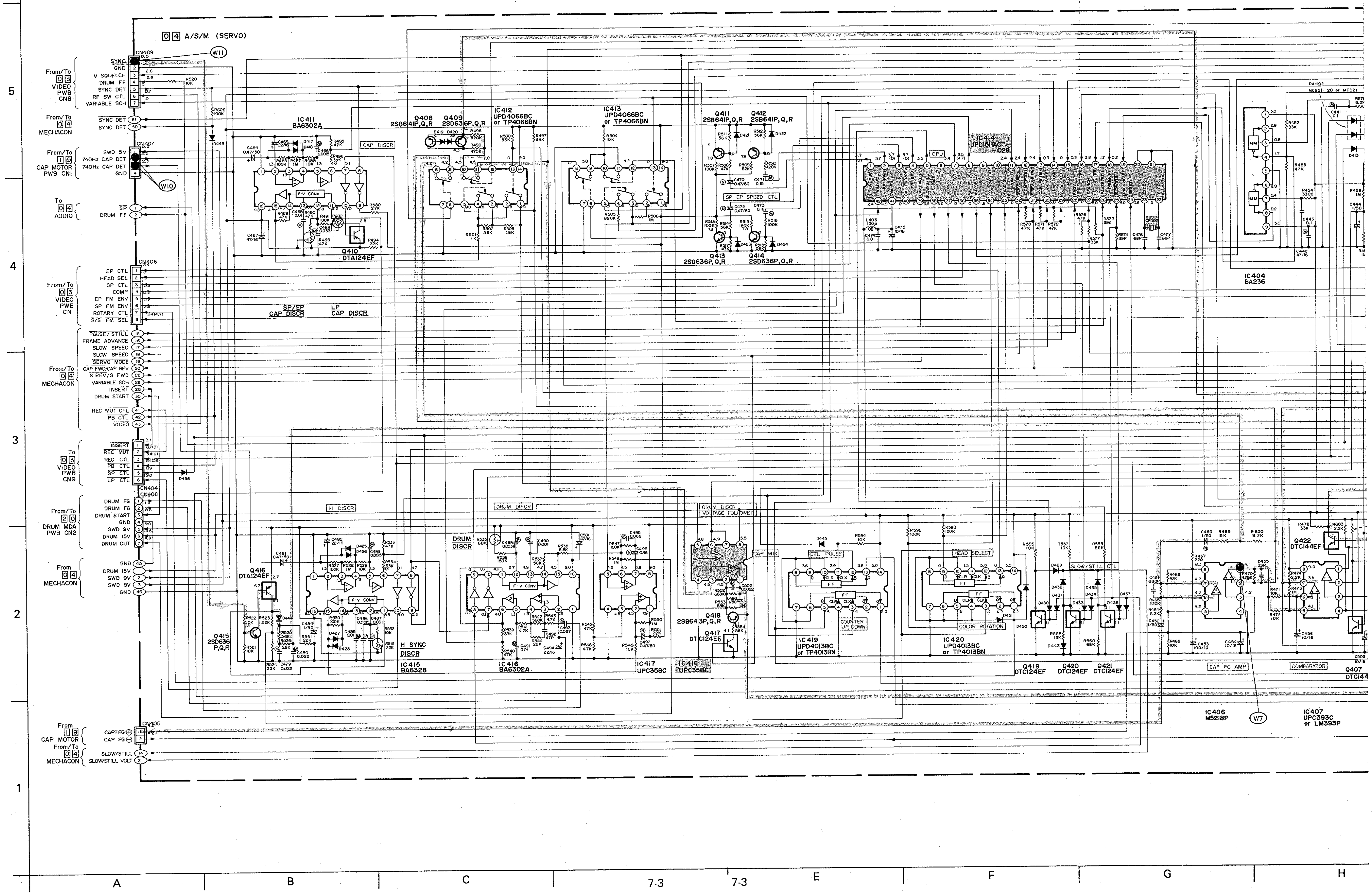

TIMING PWB ASS'Y 32 PU58114B
D1
R1
R2
B
Q1
C
E
CN1
1
7
R3
+ C1
R6
R5
D5
D2
D3
R7
R8
D4
B C Q2 E
R4
B C Q3 E

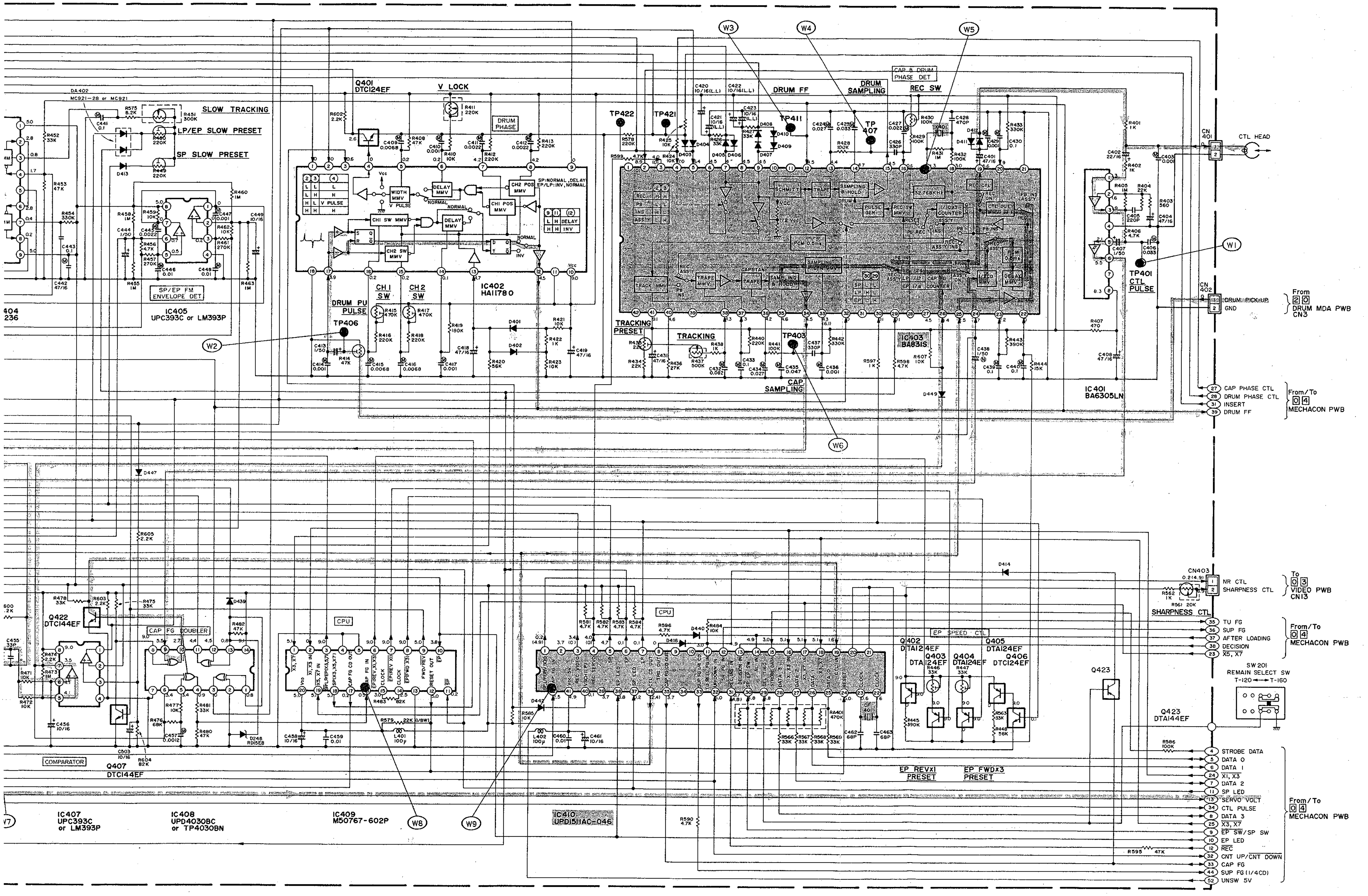
y with specified

ecording and

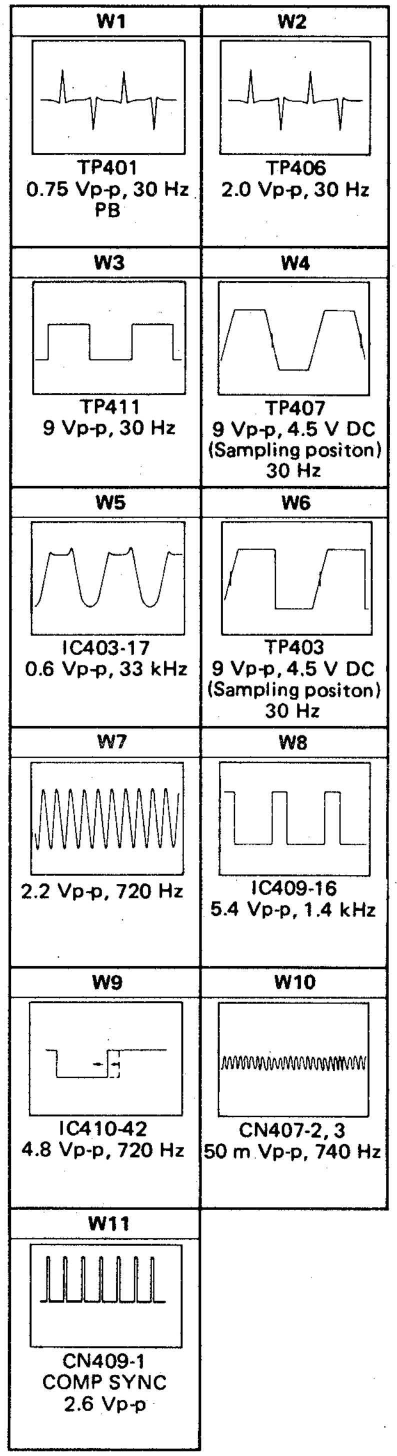
ng recording mode.
the voltage during

## 7.4 SERVO (A/S/M) SCHEMATIC DIAGRAM


6
5
4
3
2
1
A
B
C
E
F
G
H
04 A/S/M (SERVO)
W11
W10
W7
CN409
SYNC
GND
V SQUELCH
DRUM FF
SYNC DET
RF SW CTL
VARIABLE SCH
From/To 03 VIDEO PWB CN8
From/To 04 MECHACON
SYNC DET
CN407
SWD 5V
740Hz CAP DET
GND
From/To 19 CAP MOTOR PWB CN1
To 04 AUDIO
SP
DRUM FF
CN406
EP CTL
HEAD SEL
SP CTL
COMP
EP FM ENV
SP FM ENV
ROTARY CTL
S/S FM SEL
From/To 03 VIDEO PWB CN1
PAUSE/STILL
FRAME ADVANCE
SLOW SPEED
SERVO MODE
CAP FWD/CAP REV
S REV/S FWD
VARIABLE SCH
INSERT
DRUM START
REC MUT CTL
PB CTL
VIDEO
To 03 VIDEO PWB CN9
INSERT
REC MUT
REC CTL
PB CTL
SP CTL
LP CTL
CN404
CN408
From/To 20 DRUM MDA PWB CN2
DRUM FG
DRUM START
GND
SWD 9V
DRUM 15V
DRUM OUT
From 04 MECHACON
DRUM 15V
SWD 9V
SWD 5V
CN405
From 19 CAP MOTOR
CAP FG
From/To 04 MECHACON
SLOW/STILL
SLOW/STILL VOLT
IC411 BA6302A
CAP DISCR
F-V CONV
Q408 2SB641P,Q,R
Q409 2SD636P,Q,R
Q410 DTA124EF
IC412 UPD4066BC or TP4066BN
IC413 UPD4066BC or TP4066BN
Q411 2SB641P,Q,R
Q412 2SB641P,Q,R
SP EP SPEED CTL
Q413 2SD636P,Q,R
Q414 2SD636P,Q,R
IC414 UPD1511AC -028
CPU
IC404 BA236
D4402 MC921-28 or MC921
SP/EP CAP DISCR
LP CAP DISCR
H DISCR
Q416 DTA124EF
Q415 2SD636 P,Q,R
IC415 BA6328
H SYNC DISCR
DRUM DISCR
IC416 BA6302A
IC417 UPC358C
DRUM DISCR VOLTAGE FOLLOWER
CAP MIX
IC418 UPC358C
Q418 2SB643P,Q,R
Q417 DTC124EE
CTL PULSE
COUNTER UP, DOWN
IC419 UPD4013BC or TP4013BN
HEAD SELECT
COLOR ROTATION
IC420 UPD4013BC or TP4013BN
SLOW/STILL CTL
Q419 DTC124EF
Q420 DTC124EF
Q421 DTC124EF
CAP FG AMP
IC406 M5218P
Q422 DTC144EF
COMPARATOR
IC407 UPC393C or LM393P
Q407 DTC144


SLOW TRACKING
LP/EP SLOW PRESET
SP SLOW PRESET
Q401 DTC124EF
V LOCK
DRUM PHASE
DRUM FF
DRUM SAMPLING
CAP & DRUM PHASE DET
REC SW
TP422
TP421
TP411
TP407
CTL HEAD
CN401
IC405 UPC393C or LM393P
SP/EP FM ENVELOPE DET
DRUM PU PULSE
TP406
CH1 SW
CH2 SW
IC402 HA11780
TRACKING PRESET
TRACKING
TP403
CAP SAMPLING
IC401 BA6305LN
TP401 CTL PULSE
CN402
DRUM PICK UP
GND
From 20 DRUM MDA PWB CN3
CAP PHASE CTL
DRUM PHASE CTL
INSERT
DRUM FF
From/To 04 MECHACON PWB
W1
W2
W3
W4
W5
W6
W7
W8
W9
Q422 DTC144EF
CAP FG DOUBLER
CPU
EP SPEED CTL
Q402 DTA124EF
Q403 DTA124EF
Q404 DTA124EF
Q405 DTA124EF
Q406 DTC124EF
Q423
Q423 DTA144EF
CN403
NR CTL
SHARPNESS CTL
To 03 VIDEO PWB CN13
SHARPNESS CTL
TU FG
SUP FG
AFTER LOADING
DECISION
X5, X7
From/To 04 MECHACON PWB
SW201 REMAIN SELECT SW
T-120 T-160
STROBE DATA
DATA 0
DATA 1
X1, X3
DATA 2
SP LED
SERVO VOLT
CTL PULSE
DATA 3
X3, X7
EP SW/SP SW
EP LED
REC
CNT UP/CNT DOWN
CAP FG
SUP FG (1/4CD)
UNSW 5V
From/To 04 MECHACON PWB
COMPARATOR
Q407 DTC144EF
EP REVx1 PRESET
EP FWDx3 PRESET
IC407 UPC393C or LM393P
IC408 UPD4030BC or TP4030BN
IC409 M50767-602P
IC410 UPD1511AC-046

## Waveforms of servo circuit

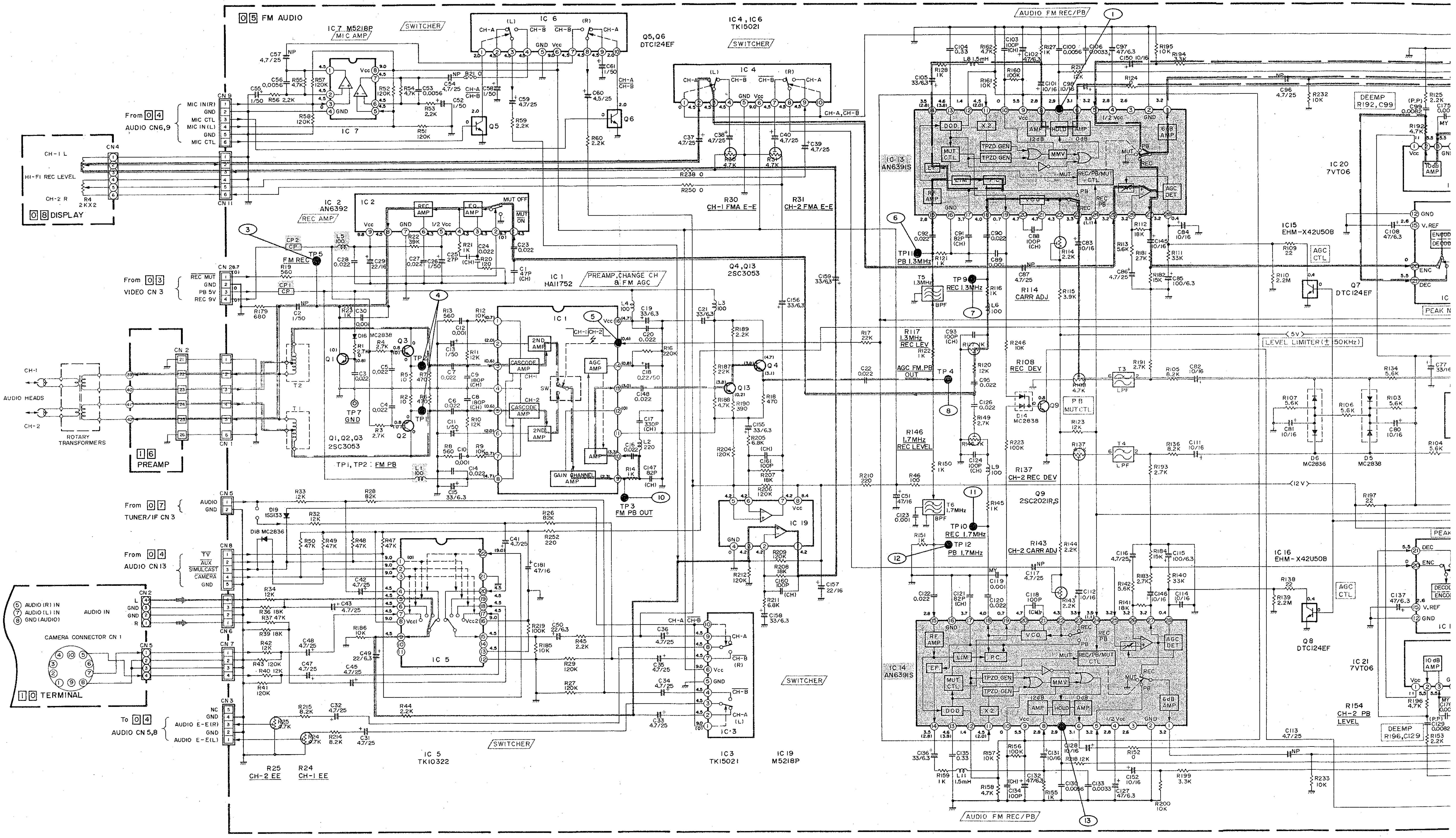


**NOTES:** Unless otherwise specified.

1. All resistance values are in ohms.
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. All diodes are 1SS133.
5. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.
6. The digital transistor is a transistor that includes built in resistors. Both PNP and NPN transistors are available.
7. Waveforms are measured with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
8. Voltages are DC-measured with a digital voltmeter during recording (SP mode).
9. Where voltage differs between recording (SP mode) and playback (SP mode), the voltage during playback is shown in parentheses.

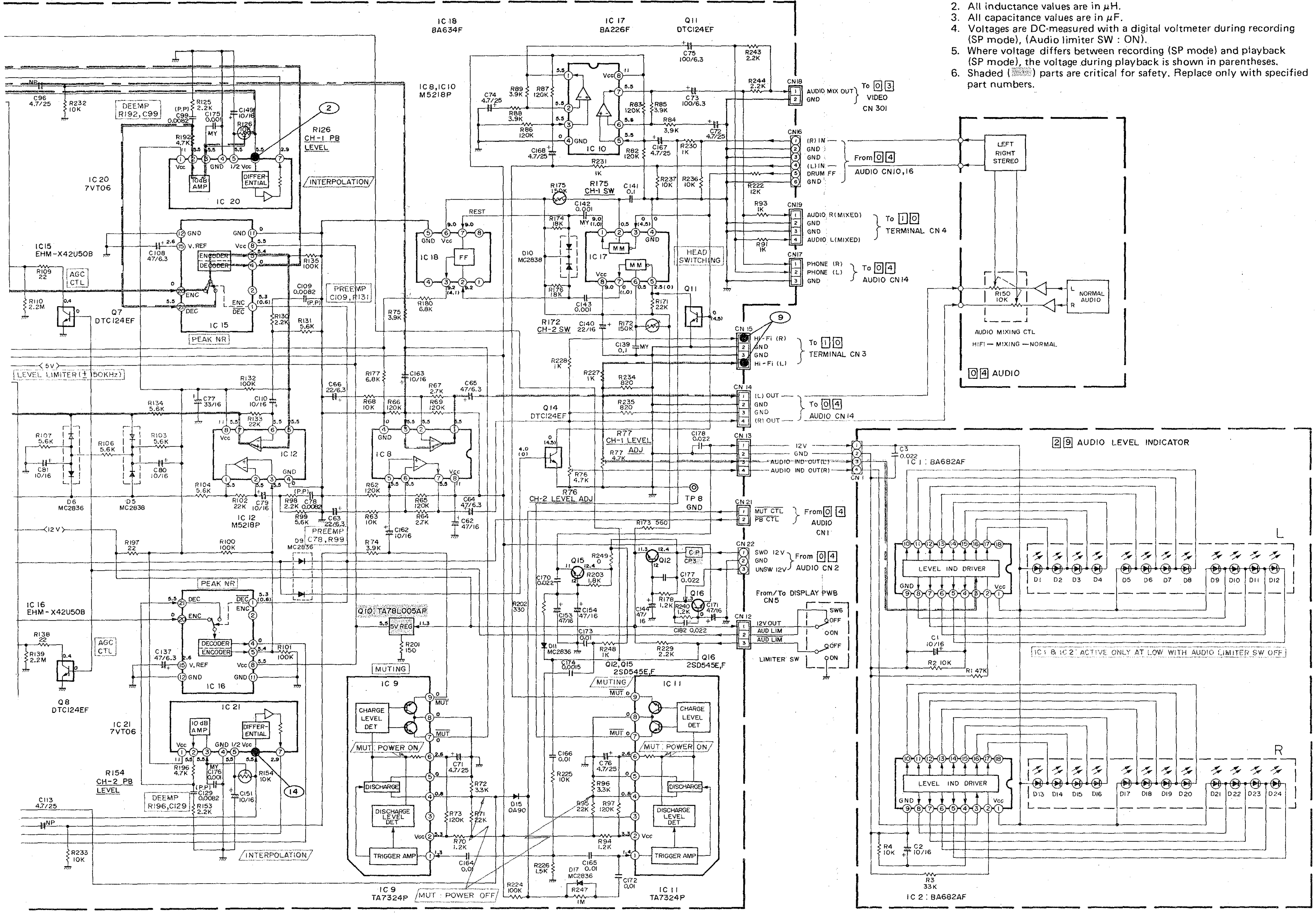
## 7.5 FM AUDIO AND AUDIO INDICATOR SCHEMATIC DIAGRAMS

### – FM AUDIO –

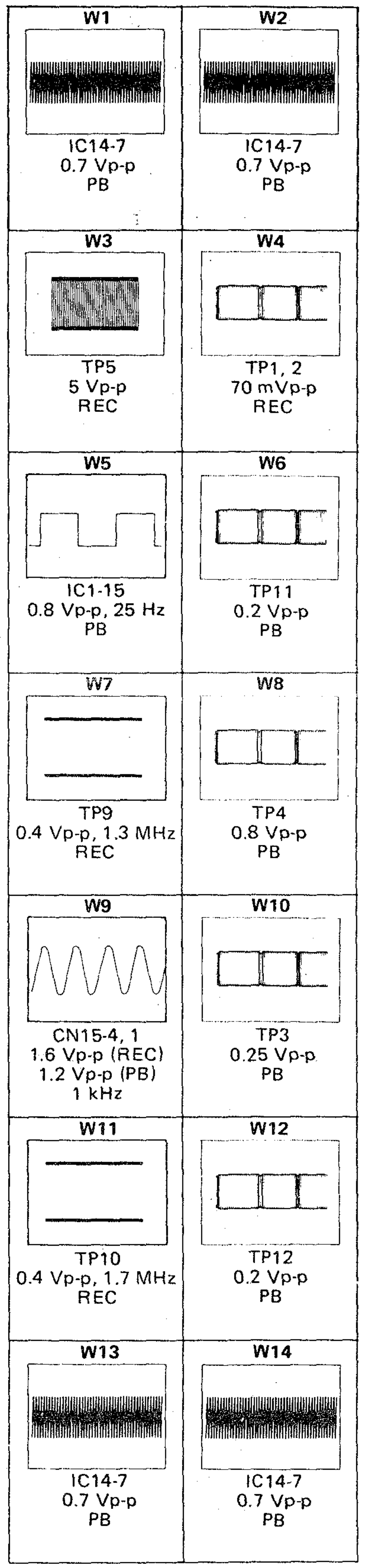

05 FM AUDIO
IC 7 M5218P MIC AMP
SWITCHER
IC 6
IC4, IC6 TK15021
Q5, Q6 DTC124EF
IC 4
AUDIO FM REC/PB
From 04 AUDIO CN6,9
MIC IN(R)
GND
MIC CTL
MIC IN(L)
CH-1 L
HI-FI REC LEVEL
CH-2 R
08 DISPLAY
IC 2 AN6392 REC AMP
FM REC
TP5
From 03 VIDEO CN 3
REC MUT
PB 5V
REC 9V
IC 1 HA11752
PREAMP, CHANGE CH & FM AGC
Q4, Q13 2SC3053
R30 CH-1 FMA E-E
R31 CH-2 FMA E-E
IC 13 AN6391S
IC 20 7VT06
IC15 EHM-X42U50B
AGC CTL
Q7 DTC124EF
DEEMP R192, C99
TP11 PB 1.3MHz
TP9 REC 1.3MHz
R114 CARR ADJ
R117 1.3MHz REC LEV
AGC FM.PB OUT
TP 4
R108 REC DEV
LEVEL LIMITER (±150KHz)
R146 1.7MHz REC LEVEL
R137 CH-2 REC DEV
Q9 2SC2021R,S
TP10 REC 1.7MHz
TP 12 PB 1.7MHz
R143 CH-2 CARR ADJ
IC 16 EHM-X42U50B
AGC CTL
Q8 DTC124EF
IC 21 7VT06
IC 14 AN6391S
R154 CH-2 PB LEVEL
DEEMP R196, C129
D14 MC2838
D6 MC2836
D5 MC2838
AUDIO HEADS
CH-1
CH-2
ROTARY TRANSFORMERS
16 PREAMP
Q1, Q2, Q3 2SC3053
TP1, TP2 : FM PB
TP7 GND
TP3 FM PB OUT
GAIN CHANNEL AMP
From 07 TUNER/IF CN 3
AUDIO
GND
From 04 AUDIO CN13
TV
AUX
SIMULCAST
CAMERA
IC 5 TK10322
IC 19 M5218P
IC 3 TK15021
SWITCHER
⑤ AUDIO (R) IN
⑦ AUDIO (L) IN
⑧ GND (AUDIO)
AUDIO IN
CAMERA CONNECTOR CN 1
10 TERMINAL
To 04 AUDIO CN 5,8
AUDIO E-E(R)
AUDIO E-E(L)
R25 CH-2 EE
R24 CH-1 EE
AUDIO FM REC/PB
A
B
C
D
E
F
G
H
1
2
3
4
5
6

**NOTES:** Unless otherwise specified.

1. All resistance values are in ohms. (1/6 W, 1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. Voltages are DC-measured with a digital voltmeter during recording (SP mode). (Audio limiter SW : ON).
5. Where voltage differs between recording (SP mode) and playback (SP mode), the voltage during playback is shown in parentheses.
6. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

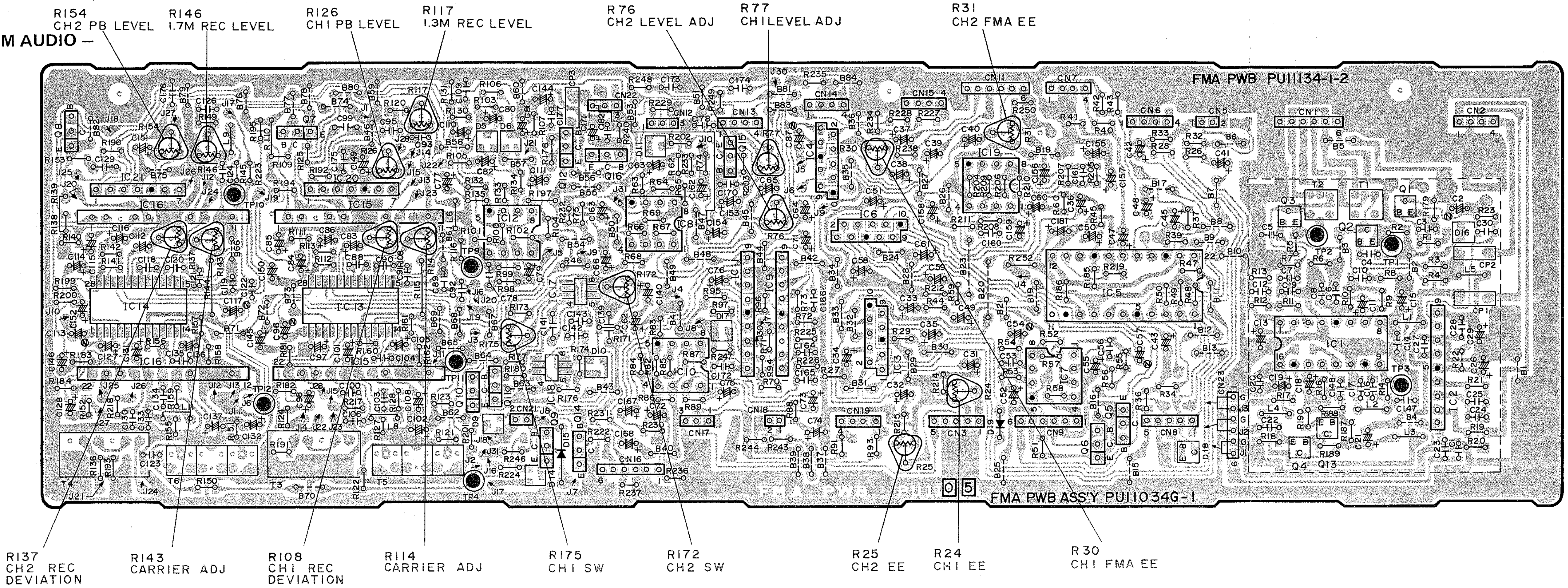

IC 18
BA634F
IC 17
BA226F
Q11
DTC124EF
IC 8, IC 10
M5218P
IC 20
7VT06
IC 15
EHM-X42U50B
Q7
DTC124EF
IC 16
EHM-X42U50B
Q8
DTC124EF
IC 21
7VT06
IC 12
M5218P
DEEMP
R192, C99
R126
CH-1 PB
LEVEL
INTERPOLATION
ENCODER
DECODER
AGC CTL
PEAK NR
PREEMP
C109, R131
PREEMP
C78, R99
LEVEL LIMITER (± 150KHz)
R175
CH-1 SW
R172
CH-2 SW
HEAD SWITCHING
R77
CH-1 LEVEL ADJ
R76
CH-2 LEVEL ADJ
Q14
DTC124EF
TP 8
GND
Q10 : TA78L005AP
5V REG
MUTING
IC 9
TA7324P
IC 11
TA7324P
CHARGE LEVEL DET
DISCHARGE
DISCHARGE LEVEL DET
TRIGGER AMP
MUT : POWER ON
MUT : POWER OFF
Q12, Q15
2SD545E,F
Q16
2SD545E,F
R154
CH-2 PB
LEVEL
DEEMP
R196, C129
CN18
AUDIO MIX OUT
GND
To 03
VIDEO
CN 301
CN16
(R) IN
GND
GND
(L) IN
DRUM FF
GND
From 04
AUDIO CN10, 16
CN19
AUDIO R (MIXED)
GND
GND
AUDIO L (MIXED)
To 10
TERMINAL CN 4
CN17
PHONE (R)
PHONE (L)
GND
To 04
AUDIO CN14
CN 15
Hi-Fi (R)
GND
GND
Hi-Fi (L)
To 10
TERMINAL CN 3
CN 14
(L) OUT
GND
GND
(R) OUT
To 04
AUDIO CN14
CN 13
12V
GND
AUDIO IND OUT (L)
AUDIO IND OUT (R)
CN 21
MUT CTL
PB CTL
From 04
AUDIO
CN1
CN 22
SWD 12V
GND
UNSW 12V
From 04
AUDIO CN 2
From/To DISPLAY PWB
CN5
CN 12
12V OUT
AUD LIM
AUD LIM
LIMITER SW
SW6
OFF
ON
LEFT
RIGHT
STEREO
NORMAL AUDIO
R150
10K
AUDIO MIXING CTL
HIFI — MIXING — NORMAL
04 AUDIO
29 AUDIO LEVEL INDICATOR
IC 1 : BA682AF
IC 2 : BA682AF
LEVEL IND DRIVER
L
R
IC1 & IC2 ACTIVE ONLY AT LOW WITH AUDIO LIMITER SW OFF
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12
D13 D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24

## Waveforms of FM audio circuit

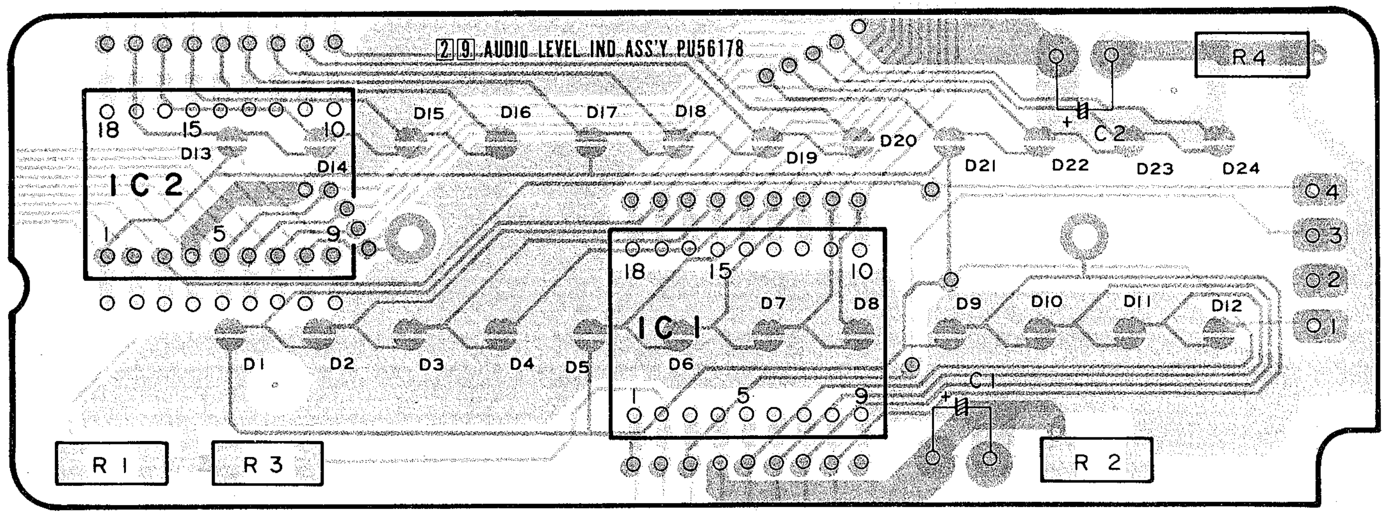


## 7.6 FM AUDIO AND AUDIO INDICATOR CIRCUIT BOARDS

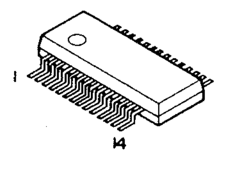
### – FM AUDIO –


R154
CH2 PB LEVEL
R146
1.7M REC LEVEL
R126
CH1 PB LEVEL
R117
1.3M REC LEVEL
R76
CH2 LEVEL ADJ
R77
CH1LEVEL ADJ
R31
CH2 FMA EE
FMA PWB PU11134-1-2
FMA PWB ASS'Y PU11034G-1
05
IC21
IC20
IC16
IC15
IC14
IC13
IC12
IC19
IC10
IC9
IC6
IC5
IC4
IC3
IC7
IC1
IC2
T1
T2
T3
T4
T5
T6
CN1
CN2
CN3
CN5
CN6
CN7
CN8
CN9
CN11
CN13
CN14
CN15
CN16
CN17
CN18
CN19
CN21
CN22
CN23
TP1
TP2
TP3
TP4
TP9
TP10
TP11
TP12
R137
CH2 REC
DEVIATION
R143
CARRIER ADJ
R108
CH1 REC
DEVIATION
R114
CARRIER ADJ
R175
CH1 SW
R172
CH2 SW
R25
CH2 EE
R24
CH1 EE
R30
CH1 FMA EE

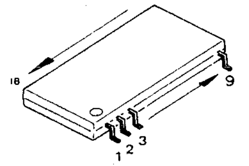
### – AUDIO INDICATOR –


29 AUDIO LEVEL IND ASS'Y PU56178
R4
IC2
18
15
10
1
5
9
D13
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
C2
4
3
2
1
IC1
18
15
10
1
5
9
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
C1
R1
R3
R2

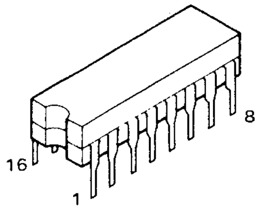
AN6391S



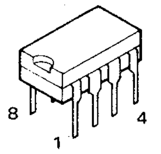
BA682AF



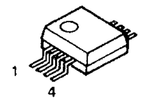
HA11752



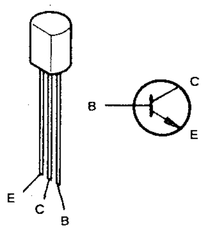
M5218P



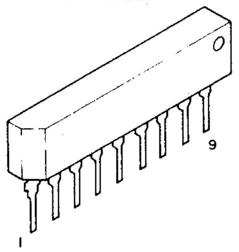
BA226F
BA634F



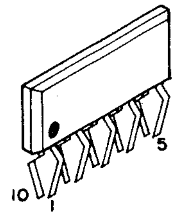
2SD545



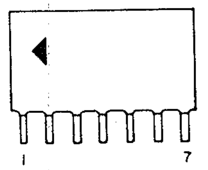
AN6392



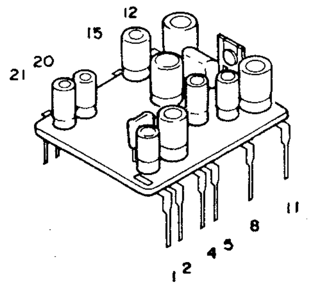
TK15021



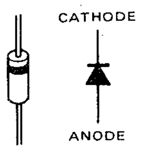
7VT06



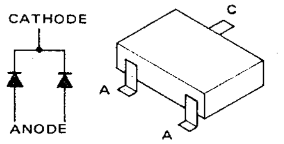
EHM-X42U50B


12
15
20
21
11
8
5
4
2
1

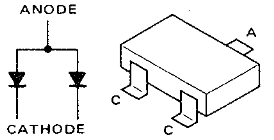
1SS133
OA90


CATHODE
ANODE

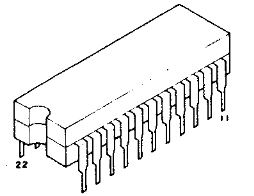
MC2838


CATHODE
ANODE
C
A
A

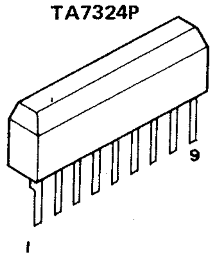
MC2836


ANODE
CATHODE
A
C
C

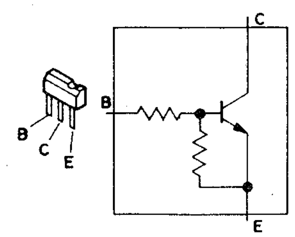
TK10322



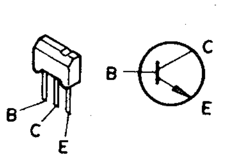
TA7324P



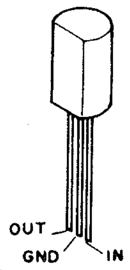
DTC124EF



2SC2021
2SC3053



TA78L005AP



# SECTION 8
# ELECTRICAL PARTS LIST

**SAFETY PRECAUTION**

**Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.**

**ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:**

RESISTORS—All resistance values are in ohms (Ω), unless otherwise indicated.

k : 1,000 (Kilo)
M : 1,000,000 (Mega)

Chip R : Chip Resistor
Chip VR : Chip Variable Resistor
Comp. R : Composition Resistor
CR : Carbon Film Resistor
FR : Fusible Resistor
MFR : Metal Film Resistor
MPR : Metal Plate Resistor
OMR : Oxide Metal Film Resistor
PMR : Precision Metal Film Resistor
UFR : Unflammable Resistor
VR : Variable Resistor (Potentiometer)
WR : Wire Wound Resistor

CAPACITORS—All capacitance values are in μF, unless otherwise indicated.

pF : μμF (Pico farad)

C Cap : Ceramic Capacitor
Chip Cap : Chip Capacitor
Chip T Cap: Chip Tantalum Capacitor
E Cap : Electrolytic Capacitor
FM Cap : Film Mica Capacitor
LL Cap : Low Leak Current Electrolytic Capacitor
MM Cap : Metalized Mylar Capacitor
MP Cap : Metalized Paper Capacitor
MY Cap : Mylar Capacitor
NP Cap : Non-polar Capacitor
PC Cap : Polycarbonate Capacitor
PP Cap : Polypropylene Capacitor
PS Cap : Polystyrol Capacitor
T Cap : Tantalum Capacitor
TF Cap : Thin Film Capacitor
TR Cap : Trimmer Capacitor

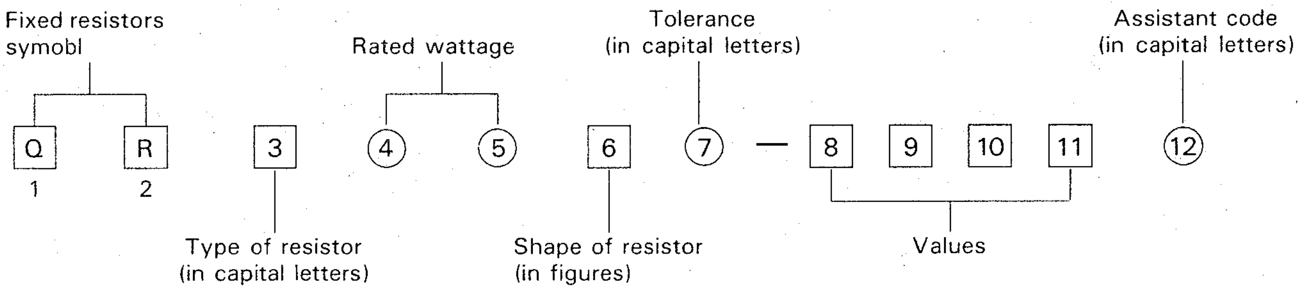
**NOTES:**

- [2 digits] indicate circuit board symbol number.
- "x2" indicates two pieces.
- Parts not denoted by parts numbers are not supplied by JVC.

## 8.1 STANDARD PART NUMBER CODING

### 8.1.1 Fixed resistor coding

**Fixed resistor part numbers are as follows.**


Fixed resistors
symobl
Rated wattage
Tolerance
(in capital letters)
Assistant code
(in capital letters)
Q
R
1
2
3
4
5
6
7
—
8
9
10
11
12
Type of resistor
(in capital letters)
Shape of resistor
(in figures)
Values

**Type of resistor (third digit)**

| | |
|---|---|
| C | Composition resistors |
| D | Carbon film resistors |
| F | Unflammable resistors |
| G | Oxide metal film resistors |
| H | Fusible resistors |
| M | Metal plate resistors |
| S | Metal glazed resistors |
| V | Precision metal film resistors |
| W | Wire wound resistors |
| X | Metal film resistors |
| Z | Special resistors |

**Rated wattage (fourth and fifth digits)**

| | |
|---|---|
| A0 | 1/10 W |
| 18 | 1/8 W |
| 16 | 1/6 W |
| 14 | 1/4 W |
| 12 | 1/2 W |
| 01 | 1 W |
| 02 | 2 W |
| 03 | 3 W |
| 04 | 4 W |
| 05 | 5 W |
| 06 | 6 W |
| 07 | 7 W |
| 75 | 7.5 W |
| 08 | 8 W |
| 10 | 10 W |
| 15 | 15 W |
| A6 | 16 W |
| 20 | 20 W |
| 30 | 30 W |

**Tolerance (seventh digit)**

| | |
|---|---|
| F | ±1 % |
| G | ±2 % |
| J | ±5 % |
| K | ±10 % |
| M | ±20 % |

**Assistant code (twelfth digit)**

| | |
|---|---|
| A | Small type |
| B | Small type |
| S | Small type |
| Y | Lead taping |
| Z | Lead taping |

**Values (eighth — tenth or eleventh digits)**

examples:

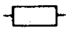
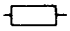
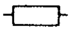
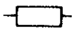
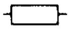
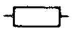
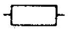
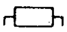
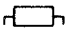
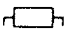
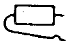
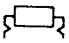
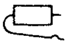
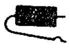
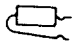
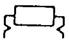
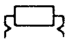
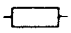
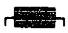
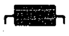
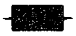
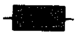
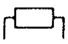
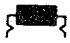
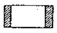
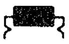
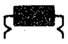
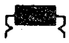
| | | |
|---|---|---|
| R47 | | 0.47 Ω |
| 4R7 | | 4.7 Ω |
| 470 | $47 \times 10^0$ | 47 Ω |
| 471 | $47 \times 10^1$ | 470 Ω |
| 472 | $47 \times 10^2$ | 4.7 kΩ |
| 473 | $47 \times 10^3$ | 47 kΩ |
| 474 | $47 \times 10^4$ | 470 kΩ |
| 475 | $47 \times 10^5$ | 4.7 MΩ |

QRV resistance shown by four digits:

| | | |
|---|---|---|
| 4640 | $464 \times 10^0$ | 464 Ω |
| 4641 | $464 \times 10^1$ | 4.64 kΩ |
| 4642 | $464 \times 10^2$ | 46.4 kΩ |

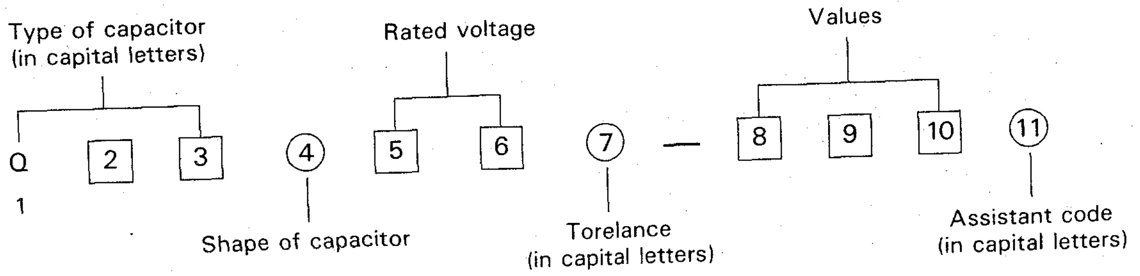
**Shape of resistor (sixth digit)**

**Note:** ■ marks are flame retardant resistor.

| Type of resistor<br>Shape of resistor | C' | D | F | G | H | M | S | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  |  |  |  |  | | |  |  | |
| 2 |  |  | | | | | |  | | |
| 3 | |  | |  | | | |  | |  |
| 4 | |  | |  |  | | |  | | |
| 5 | | | |  | | | | | (L) type |  |
| 6 | | | |  | | | | | |  |
| 7 | |  | Lug<br>(B) type | | | | | | |  |
| 8 | | | Lug<br>(A) type | | | |  Chip | | | |
| 9 | | | Lug<br>(C) type |  |  | | | | |  |

### 8.1.2 Fixed capacitor coding

**Fixed capacitor part numbers are as follows.**


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
4
5
6
7
—
8
9
10
11
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

**Ceramic capacitors**

| Type of capacitor (first — third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| Symbol | Characteristics | Mono-direction | Kink lead | Axial lead | Axial forming lead | Chip |
| QCC | Ceramic | 1 | | 4 | 5 | |
| QCD | High capacitance | | | | | A |
| QCF | High capacitance | 1,4 | 3 | | | 8,A |
| QCS | Temperature compensation | 1 | 3 | 4 | 5 | 8,A |
| QCT | Temperature compensation | Special coding | | | | 8,A |
| QCV | Ceramic | | | 1 | 3 | |
| QCX | Ceramic | | | 1 | 3 | |
| QCY | High capacitance | 1,4 | 3 | 6 | 7 | 8,A |
| QCZ | Special type | Special coding | | | | |

**Electrolytic capacitors**

| Type of capacitor (first-third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| Symbol | Characteristics | Tubular | Mono-direction | Anti-stress | Forming | Snap-in |
| QEB | Low leakage | | 4 | 5 | 6 | |
| QEC | Low leakage | | 4,8,A | 9,B | 6,C | |
| QEE | Tantalum (normal) | | 4 | 5 | 6 | |
| | Tantalum (small) | | 8 | | | |
| QEF | Chip tantalum | 8 (chip type) | | | | |
| QEG | Low impedance | | 4 | | | |
| QEK | Miniature type | | 4 | 5 | 6 | |
| QEL | Small type | | 4 | 5 | 6 | 7 |
| QEM | Small type | | 4 | 5 | 6 | |
| QEN | Non-polar | 2 | 4 | 5 | 6 | |
| QEP | Non-polar (small) | | 4,A | 5,B | 6,C | |
| QER | Miniature type | | 4 | 5 | 6 | |
| QET | Small type | 2 | 4 | 5,B | 6,C | 7 |
| QEU | Small type | | 4 | 5 | 6 | |
| QEV | Small type | | 4 | | 6 | 7 |
| QEW | Normal | 2 | 4 | 5 | 6 | 7 |

**Paper film capacitors**

| Type of capacitor (first — third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| | | Tubular | Normal | | Flame retardant | |
| Symbol | Characteristics | | Mono-direction | Kink lead | Mono-direction | Kink lead |
| QFA | Metalized polypropylene | | | | 7 | |
| QFE | Metalized mylar | | | | 5 | |
| QFF | Film mica | | 4 | | | |
| QFG | Polypropylene film | | 4 | 8 | | |
| QFH | Metalized mylar | 2 | 4 | 3 | 5,7 | 6 |
| QFJ | Mylar (special) | | 4 | | | |
| QFK | Metalized mylar (small) | | | | 5 | |
| QFM | Mylar | 2 | 4 | 3,7 | 5 | 6 |
| QFN | Mylar (small) | | 4 | 3 | | |
| QFP | Polypropylene | | 4 | 3,8 | | |
| QFS | Polystyrole | 2 | 4 | 3 | | |
| QFV | Thin film | | 4 | 8 | | |
| QFZ | Special type | Special coding | | | | |

**Rated voltage (fifth and sixth digits)**

| Sixth digit / Fifth digit | A | B | C | D | E | F | G | H | J | K | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | 3.15 | 4.0 | | 6.3 | | | | |
| 1 | 10 | | 16 | 20 | 25 | | 40 | 50 | 63 | 80 | 35 | | |
| 2 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | | 350 | 450 | 600 |
| 3 | 1000 | 1250 | | 2000 | | | | 5000 | | | | | |

**Tolerance (seventh digit)**

| | | | |
|---|---|---|---|
| A | $^{+100}_{-10}$ % | M | ±20 % |
| F | ±1 % | N | ±30 % |
| G | ±2 % | P | $^{+100}_{-0}$ % |
| H | $^{+50}_{-10}$ % | R | $^{+30}_{-10}$ % |
| J | ±5 % | X | $^{+40}_{-20}$ % |
| K | ±10 % | Z | $^{+80}_{-20}$ % |

**Values (eighth — tenth digits)**

Example : Values are in picofarads

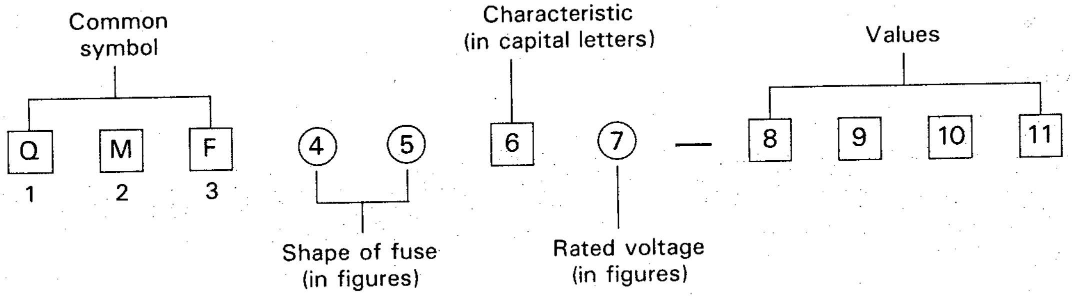
| | | |
|---|---|---|
| 101 | $10\times10^1$ pF | 100 pF |
| 102 | $10\times10^2$ pF | 1,000 pF (0.001 μF) |
| 103 | $10\times10^3$ pF | 10,000 pF (0.01 μF) |
| 104 | $10\times10^4$ pF | 100,000 pF (0.1 μF) |
| 105 | $10\times10^5$ pF | 1 μF |
| 5R0 | | 5.0 pF |

**Assistant code (eleventh digit)**

| | |
|---|---|
| G | Small size |
| Z | Lead taping |

### 8.1.3 Fuse coding

**Standard fuse part numbers are as follows.**


Common symbol
Q
M
F
1
2
3
④
⑤
Shape of fuse (in figures)
Characteristic (in capital letters)
6
⑦
Rated voltage (in figures)
—
Values
8
9
10
11

**Shape of fuse**
**(fourth and fifth digits)**

| | |
|---|---|
| 51 | φ5.2×20 mm |
| 60 | φ6.4×30 mm |
| 61 | φ6.35×31.8 mm |
| 63 | φ6.4×30 mm with lead wires |
| 66 | φ6.35×31.8 mm with lead wires |
| 00 | Special type |

**Rated voltage**
**(seventh digit)**

| | |
|---|---|
| 1 | AC125 V |
| 2 | AC250 V |
| 3 | 0.1−1 A : AC250 V<br>1.25−6.3 A : AC125 V |

**Values**
**(eighth-tenth or eleventh digits)**
example:
R63 ......... 0.63 A
1R0 ......... 1.0 A
2R5 ......... 2.5 A
100 ........ 10 A
R315 ......... 0.315 A
1R25 ......... 1.25 A

**Characteristics (sixth digit)**

| Symbol | Fusing Current | Fusing Time | Remarks |
|---|---|---|---|
| A | 210 % | Within 2 min. | Anti-rush type (for Europe) |
| | 275 % | 0.6 − 10 sec. | |
| | 400 % | 0.15 − 3 sec. | |
| | 1000 % | 0.02 − 0.3 sec. | |
| B | 210 % | Within 30 min. | Regular fusible type (for SEMKO, Europe) |
| | 275 % | 0.05 − 2 sec. | |
| | 400 % | 0.01 − 0.3 sec. | |
| C | 135 % | Within 1 hr. | Regular fusible type (for UL, Japan) |
| | 200 % | Within 2 min. | |
| E | 210 % | Within 2 min. | Anti-rush type (for Europe) |
| | 275 % | 0.6 − 10 sec. | |
| | 400 % | 0.15 − 3 sec. | |
| | 1000 % | 0.02 − 0.3 sec. | |
| J | 135 % | Within 1 hr. | Anti-rush type |
| | 200 % | Within 2 min. | |
| M | 135 % | Within 1 hr. | Regular fusible type (for UL) |
| | 200 % | Within 2 min. | |
| R | 160 % | Within 1 hr. | Regular fusible type |
| | 200 % | Within 2 min. | |
| S | 160 % | Within 1 hr. | Anti-rush type |
| | 200 % | Within 2 min. | |
| | 700 % − 2000 % | Within 0.01 sec. | |
| U | 135 % | Within 1 hr. | Anti-rush type (for UL) |
| | 200 % | Within 2 min. | |
| | 800 % − 2000 % | Within 0.01 sec. | |

### 8.2.1 Audio/Servo/Mechacon (A/S/M) Circuit Board Ass'y 0 4 . . . . . . . . . . . . . PU10864B-8

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| **[Audio Section]** | | | |
| IC 1 | 14VT06A | Integrated Circuit | |
| IC 2 | TA7361P | " | |
| IC 3 | 5VT01 | " | |
| IC 4 | AN6394 | " | |
| IC 5 | 14VT07 | " | |
| IC 6 | 11VT01 | " | |
| IC 7 | – | – | |
| IC 8 | TA7361P | Integrated Circuit | |
| IC 9 | AN6394 | " | |
| IC10 | 14VT07 | " | |
| IC11 | 11VT01 | " | |
| IC12 | – | – | |
| IC13 | TK15050 | Integrated Circuit | |
| ⚠ Q 1 | 2SD639R,S | Transistor | |
| Q 2 | 2SB644R,S | " | |
| ⚠ Q 3 | " | " | |
| ⚠ Q 4 | 2SD639S | " | |
| ⚠ Q 5 | 2SB644S | " | |
| Q 6 | 2SB641R,S | " | |
| Q 7 | 2SD636R,S | " | |
| Q 8 | DTC124EF | D. Transistor | |
| Q 9 | " | " | |
| Q10 | " | " | |
| Q11 | " | " | |
| Q12 | 2SB641R,S | Transistor | |
| Q13 | 2SD636R,S | " | |
| Q14 | DTC124EF | D. Transistor | |
| Q15 | " | " | |
| Q16 | " | " | |
| Q17 | " | " | |
| ⚠ Q18 | 2SD639R,S | Transistor | |
| Q19 | DTC124EF | D. Transistor | |
| Q20 | " | " | |
| Q21 | – | – | |
| Q22 | – | – | |
| Q23 | – | – | |
| Q24 | 2SD636Q,R,S | Transistor | |
| D 1 | 1SS133 | Diode | |
| D 2 | " | " | |
| D 3 | " | " | |
| D 4 | – | – | |
| D 5 | 1SS132 | Diode | |
| D 6 | " | " | |
| D 7 | RD6.2EB2 | Zener Diode | |
| D 8 | 1SS132 | Diode | |
| D 9 | RD8.2EB1 | Zener Diode | |
| D10 | 1SS133 | Diode | |
| D11 | " | " | |
| D12 | – | – | |
| D13 | 1SS133 | Diode | |
| D14 | " | " | |
| D15 | " | " | |
| D16 | 1SS133 | Diode | |
| D17 | " | " | |
| D18 | – | – | |
| D19 | – | – | |
| D20 | – | – | |
| D21 | – | – | |
| D22 | – | – | |
| D23 | – | – | |
| D24 | – | – | |
| D25 | 1SS133 | Diode | |
| D26 | " | " | |
| D27 | " | " | |
| D28 | " | " | |
| D29 | " | " | |
| D30 | " | " | |
| D31 | " | " | |
| D32 | " | " | |
| R 1 | QRD161J-182 | CR | |
| R 2 | " -222 | " | |
| R 3 | " -184 | " | |
| R 4 | " -560 | " | |
| R 5 | QRD181J-475 | " | |
| R 6 | QRD161J-472 | " | |
| R 7 | " -100 | " | |
| R 8 | – | – | |
| R 9 | – | – | |
| ⚠ R10 | QRZ0054-4R7 | FR | |
| R11 | – | – | |
| R12 | QRD161J-682 | CR | |
| R13 | " -123 | " | |
| R14 | " -123 | " | |
| R15 | " -392 | " | |
| R16 | – | – | |
| R17 | QVZ3518-683 | VR | CH-1 BIAS ADJ. |
| ⚠ R18 | QRD161J-273 | CR | |
| R19 | " -393 | " | |
| R20 | " -103 | " | |
| R21 | " -123 | " | |
| R22 | " -473 | " | |
| R23 | " -123 | " | |
| R24 | " -153 | " | |
| R25 | " -332 | " | |
| R26 | " -392 | " | |
| R27 | " -222 | " | |
| R28 | " -332 | " | |
| ⚠ R29 | QRZ0054-470 | FR | |
| R30 | QRD161J-560 | CR | |
| R31 | " -151 | " | |
| R32 | – | – | |
| R33 | QRD161J-183 | CR | |
| R34 | – | – | |
| R35 | QVZ3518-103 | VR | CH-1 PB LEVEL ADJ. |
| R36 | QRD161J-560 | CR | |
| R37 | " -682 | " | |
| R38 | " -124 | " | |
| R39 | " -392 | " | |
| R40 | " -124 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R41 | QRD161J-181 | CR | |
| R42 | " -221 | " | |
| R43 | " -123 | " | |
| R44 | " -223 | " | |
| R45 | " -154 | " | |
| R46 | " -153 | " | |
| R47 | " -103 | " | |
| R48 | " -103 | " | |
| R49 | " -123 | " | |
| R50 | QVZ3518-472 | VR | CH-1 REC LEVEL ADJ. |
| R51 | QRD161J-153 | CR | |
| R52 | " -471 | " | |
| R53 | " -822 | " | |
| ⚠ R54 | QRZ0054-470 | FR | |
| R55 | QRD161J-152 | CR | |
| R56 | " -273 | " | |
| R57 | — | — | |
| R58 | QRD161J-124 | CR | |
| R59 | " -124 | " | |
| R60 | QRD181J-221 | " | |
| R61 | — | — | |
| R62 | QVZ3518-683 | VR | CH-2 BIAS ADJ. |
| R63 | QRD161J-273 | CR | |
| ⚠ R64 | QRZ0054-470 | FR | |
| R65 | QRD161J-393 | CR | |
| R66 | " -183 | " | |
| R67 | " -560 | " | |
| R68 | " -151 | " | |
| R69 | — | — | |
| R70 | QVZ3518-103 | VR | CH-2 PB LEVEL ADJ. |
| R71 | QRD161J-123 | CR | |
| R72 | " -103 | " | |
| R73 | " -473 | " | |
| R74 | " -560 | " | |
| R75 | " -124 | " | |
| R76 | " -682 | " | |
| R77 | " -151 | " | |
| R78 | " -392 | " | |
| R79 | " -124 | " | |
| R80 | " -221 | " | |
| R81 | " -223 | " | |
| R82 | " -123 | " | |
| R83 | " -123 | " | |
| R84 | " -154 | " | |
| R85 | " -153 | " | |
| R86 | " -103 | " | |
| R87 | " -103 | " | |
| R88 | QVZ3518-472 | VR | CH-2 REC LEVEL ADJ. |
| R89 | QRD161J-153 | CR | |
| R90 | " -471 | " | |
| R91 | " -822 | " | |
| R92 | " -273 | " | |
| R93 | " -152 | " | |
| R94 | — | — | |
| R95 | QRD161J-331 | CR | |
| R96 | " -331 | " | |
| R97 | " -331 | " | |
| R98 | " -331 | " | |
| ⚠ R99 | QRZ0054-470 | FR | |
| R100 | QRD161J-222 | CR | |
| R101 | " -223 | " | |
| R102 | " -223 | " | |
| R103 | " -331 | " | |
| R104 | " -152 | " | |
| R105 | " -152 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R106 | QRD161J-331 | CR | |
| R107 | " -221 | " | |
| R108 | — | — | |
| R109 | — | — | |
| R110 | — | — | |
| R111 | QRD161J-221 | CR | |
| R112 | — | — | |
| R113 | — | — | |
| R114 | — | — | |
| R115 | — | — | |
| R116 | QRD161J-103 | CR | |
| R117 | " -103 | " | |
| R118 | " -223 | " | |
| R119 | " -222 | " | |
| R120 | " -222 | " | |
| R121 | " -472 | " | |
| R122 | " -472 | " | |
| R123 | " -223 | " | |
| R124 | " -472 | " | |
| R150 | PU56165-2 | VR | MIX VR |
| C 1 | QEK61CM-476 | E Cap | |
| C 2 | " -476 | " | |
| C 3 | QET41CM-107 | " | |
| C 4 | QEK61CM-106 | " | |
| C 5 | QFN31HJ-683 | MY Cap | |
| C 6 | QEN41EM-475 | NP Cap | |
| C 7 | QFN31HJ-154 | MY Cap | |
| C 8 | QEN41HM-225 | NP Cap | |
| C 9 | QFZ9011-224 | MP Cap | |
| C10 | QFP32AJ-273M | PP Cap | |
| C11 | QCS31HJ-561 | C Cap | |
| C12 | QFN31HJ-103 | MY Cap | |
| C13 | QET61CM-107 | E Cap | |
| C14 | QEK61HM-105 | " | |
| C15 | QET61CM-107 | " | |
| C16 | QEK61EM-475 | " | |
| C17 | QCS31HJ-391 | C Cap | |
| C18 | QEK61EM-335 | E Cap | |
| C19 | QEK61CM-106 | " | |
| C20 | " -226 | " | |
| C21 | " -476 | " | |
| C22 | QFN31HJ-124 | MY Cap | |
| C23 | " -333 | " | |
| C24 | QEK61EM-475 | E Cap | |
| C25 | QEK61HM-334 | " | |
| C26 | QFN31HJ-273 | MY Cap | |
| C27 | " -273 | " | |
| C28 | QEB61CM-226 | LL Cap | |
| C29 | QFN31HJ-102 | MY Cap | |
| C30 | " -102 | " | |
| C31 | QEL61EM-475 | LL Cap | |
| C32 | QFN31HJ-683 | MY Cap | |
| C33 | " -103 | " | |
| C34 | QEK61AM-476 | E Cap | |
| C35 | QEK60JM-107 | " | |

## [Audio/S/M]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C36 | QEK61CM-106 | E Cap | |
| C37 | " -106 | " | |
| C38 | " -106 | " | |
| C39 | QEK61EM-335 | " | |
| C40 | QFN31HJ-182 | MY Cap | |
| C41 | " -152 | " | |
| C42 | QEK61CM-476 | E Cap | |
| C43 | — | — | |
| C44 | QEK61CM-476 | E Cap | |
| C45 | QEK61EM-475 | " | |
| C46 | " -475 | " | |
| C47 | QEN61EM-475 | NP Cap | |
| C48 | " -475 | " | |
| C49 | QEK61CM-476 | E Cap | |
| C50 | QEK61EM-475 | " | |
| C51 | QCS31HJ-391 | C Cap | |
| C52 | QEK61HM-335 | E Cap | |
| C53 | QEK61CM-106 | " | |
| C54 | " -226 | " | |
| C55 | " -476 | " | |
| C56 | QFN31HJ-124 | MY Cap | |
| C57 | " -333 | " | |
| C58 | QEK61EM-475 | E Cap | |
| C59 | QEK61HM-334 | " | |
| C60 | QFN31HJ-273 | MY Cap | |
| C61 | " -273 | " | |
| C62 | " -102 | " | |
| C63 | " -102 | " | |
| C64 | QEL61EM-475 | LL Cap | |
| C65 | QFN31HJ-683 | MY Cap | |
| C66 | QEB61CM-226 | LL Cap | |
| C67 | QFN31HJ-103 | MY Cap | |
| C68 | QEK61AM-476 | E Cap | |
| C69 | QEK60JM-107 | " | |
| C70 | QEK61CM-106 | " | |
| C71 | " -476 | " | |
| C72 | QEK61EM-335 | " | |
| C73 | QEK61CM-106 | " | |
| C74 | " -106 | " | |
| C75 | — | — | |
| C76 | QEK61CM-476 | E Cap | |
| C77 | QFN31HJ-152 | MY Cap | |
| C78 | " -182 | " | |
| C79 | " -333 | " | |
| C80 | " -332 | " | |
| C81 | " -332 | " | |
| C82 | " -332 | " | |
| C83 | QEK61HM-105 | E Cap | |
| C84 | " -105 | " | |
| C85 | QFN31HJ-332 | MY Cap | |
| C86 | " -103 | " | |
| C87 | QEK61CM-106 | E Cap | |
| C88 | " -106 | " | |
| C89 | — | — | |
| C90 | QFN31HJ-103 | MY Cap | |
| C91 | QCS31HJ-561 | C Cap | |
| C92 | — | — | |
| C93 | QEK61CM-106 | E Cap | |
| C94 | QCS31HJ-561 | C Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L 1 | PU54710-102 | Coil | |
| L 2 | PU49994-181 | " | |
| L 3 | " -560 | " | |
| L 4 | PU30284-28R | " | |
| L 5 | PU54710-472 | " | |
| L 6 | " -472 | " | |
| L 7 | " -472 | " | |
| L 8 | " -472 | " | |
| L 9 | PU53618-561F | Peaking Coil | |
| CN 1 | PU49215-2 | Cap. Housing | |
| CN 2 | " -2Y | " | |
| CN 3 | " -4 | " | |
| CN 4 | " -3 | " | |
| CN 5 | " -2R | " | |
| CN 6 | " -3 | " | |
| CN 7 | " -3R | " | |
| CN 8 | " -3Y | " | |
| CN 9 | " -3R | " | |
| CN10 | " -4 | " | |
| CN11 | — | — | |
| CN12 | — | — | |
| CN13 | — | — | |
| CN14 | — | — | |
| CN15 | — | — | |
| CN16 | PU49215-2 | Cap. Housing | |
| RY 1 | PU55259 | Relay | |
| RY 2 | " | " | |
| RY 3 | " | " | |
| ⚠ T 1 | PU56138 | Osc. Trans. | |
| T 2 | PU56139 | Trap Coil | |
| T 3 | " | " | |
| SW 1 | PU55852-1-2 | Slide Switch | NR |
| SW 2 | " -3-2 | " | DUB. |
| SW 3 | " -4-2 | " | MONITOR |
| SW 4 | PU55298 | " | PHONE LEV |
| SW 5 | PU55855 | Rotary Switch | REC SELECT |
| | QMS6302-124 | Headphone Jack | |
| | QMS6331-001 | Mic. Jack | |
| | PU34689-1-2 | Shield Case | |
| | PU34690 | " | |
| | PU56826 | Dust Cover | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| **[Servo Section]** | | | |
| IC401 | BA6305LN | Integrated Circuit | |
| IC402 | HA11780 | " | |
| ⚠IC403 | BA831S | " | |
| IC404 | BA236 | " | |
| IC405 | UPC393C | " | or LM393P |
| IC406 | M5218P | " | |
| IC407 | UPC393C | " | or LM393P |
| IC408 | UPD4030BC | " | or TP4030BN |
| IC409 | M50767-602P | " | |
| ⚠IC410 | UPD1511AC-046 | " | |
| IC411 | BA6302A | " | |
| IC412 | UPD4066BC | " | or TP4066BN |
| IC413 | " | " | or " |
| ⚠IC414 | UPD1511AC-028 | " | |
| IC415 | BA6328 | " | |
| IC416 | BA6302A | " | |
| IC417 | UPC358C | " | |
| ⚠IC418 | " | " | |
| IC419 | UPD4013BC | " | or TP4013BN |
| IC420 | " | " | or " |
| Q401 | DTC124EF | D. Transistor | |
| Q402 | DTA124EF | " | |
| Q403 | " | " | |
| Q404 | " | " | |
| Q405 | " | " | |
| Q406 | DTC124EF | " | |
| Q407 | DTC144EF | " | |
| Q408 | 2SB641P,Q,R | Transistor | |
| Q409 | 2SD636P,Q,R | " | |
| Q410 | DTA124EF | D. Transistor | |
| Q411 | 2SB641P,Q,R | Transistor | |
| Q412 | " | " | |
| Q413 | 2SD636P,Q,R | " | |
| Q414 | " | " | |
| Q415 | " | " | |
| Q416 | DTA124EF | D. Transistor | |
| Q417 | DTC124EF | " | |
| Q418 | 2SB643P,Q,R | Transistor | |
| Q419 | DTC124EF | D. Transistor | |
| Q420 | " | " | |
| Q421 | " | " | |
| Q422 | DTC144EF | " | |
| Q423 | DTA144EF | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| D401 | 1SS133 | Diode | |
| D402 | " | " | |
| D403 | " | " | |
| D404 | " | " | |
| D405 | " | " | |
| D406 | " | " | |
| D407 | " | " | |
| D408 | " | " | |
| D409 | " | " | |
| D410 | " | " | |
| D411 | " | " | |
| D412 | " | " | |
| D413 | " | " | |
| D414 | " | " | |
| D415 | – | – | |
| D416 | 1SS133 | Diode | |
| D417 | " | " | |
| D418 | " | " | |
| D419 | " | " | |
| D420 | " | " | |
| D421 | " | " | |
| D422 | " | " | |
| D423 | " | " | |
| D424 | " | " | |
| D425 | " | " | |
| D426 | " | " | |
| D427 | " | " | |
| D428 | " | " | |
| D429 | " | " | |
| D430 | " | " | |
| D431 | " | " | |
| D432 | " | " | |
| D433 | " | " | |
| D434 | " | " | |
| D435 | " | " | |
| D436 | " | " | |
| D437 | " | " | |
| D438 | " | " | |
| D439 | " | " | |
| D440 | " | " | |
| D441 | – | – | |
| D442 | 1SS133 | Diode | |
| D443 | " | " | |
| D444 | " | " | |
| D445 | " | " | |
| D446 | – | – | |
| D447 | 1SS133 | Diode | |
| D448 | " | " | |
| D449 | " | " | |
| D450 | " | " | |
| D451 | " | " | |
| DA401 | – | – | |
| DA402 | MC921-28 | Diode Array | or MC921 |

## [A/Servo/M]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R401 | QRD161J-102 | CR | |
| R402 | " -102 | " | |
| R403 | " -561 | " | |
| R404 | " -223 | " | |
| R405 | " -105 | " | |
| R406 | " -472 | " | |
| R407 | " -471 | " | |
| R408 | " -473 | " | |
| R409 | — | — | |
| R410 | QRD161J-103 | CR | |
| R411 | QVZ1802-224 | VR | V. LOCK |
| R412 | QRD161J-224 | CR | |
| R413 | " -224 | " | |
| R414 | QVZ3518-473 | VR | Drum PU Pulse |
| R415 | QVZ3518-474 | " | CH-1 SW |
| R416 | QRD161J-224 | CR | |
| R417 | QVZ3518-474 | VR | CH-2 SW |
| R418 | QRD161J-224 | CR | |
| R419 | " -184 | " | |
| R420 | " -563 | " | |
| R421 | " -103 | " | |
| R422 | " -102 | " | |
| R423 | " -103 | " | |
| R424 | " -103 | " | |
| R425 | " -103 | " | |
| R426 | " -333 | " | |
| R427 | " -333 | " | |
| R428 | " -104 | " | |
| R429 | " -104 | " | |
| R430 | QVZ3518-104 | VR | REC SW |
| R431 | QRD161J-105 | CR | |
| R432 | " -104 | " | |
| R433 | " -334 | " | |
| R434 | " -223 | " | |
| R435 | QVZ3520-223 | VR | Tracking Preset |
| R436 | QRD161J-273 | CR | |
| R437 | PU56164-3 | VR | Tracking |
| R438 | QRD161J-102 | CR | |
| R439 | — | — | |
| R440 | QRD161J-224 | CR | |
| R441 | " -104 | " | |
| R442 | " -334 | " | |
| R443 | " -394 | " | |
| R444 | " -153 | " | |
| R445 | " -394 | " | |
| R446 | QVZ3518-333 | VR | EP REV x 1 Preset |
| R447 | " -333 | " | EP FWD x 3 Preset |
| R448 | " -333 | CR | |
| R449 | QVZ3244-224 | VR | SP Slow Preset |
| R450 | " -224 | " | LP/EP Slow Preset |
| R451 | PU56164-2 | " | Slow Tracking |
| R452 | QRD161J-333 | CR | |
| R453 | " -473 | " | |
| R454 | " -334 | " | |
| R455 | " -105 | " | |
| R456 | " -472 | " | |
| R457 | " -274 | " | |
| R458 | " -105 | " | |
| R459 | " -103 | " | |
| R460 | " -105 | " | |
| R461 | " -274 | " | |
| R462 | " -103 | " | |
| R463 | " -105 | " | |
| R464 | " -822 | " | |
| R465 | " -224 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R466 | QRD161J-103 | CR | |
| R467 | " -221 | " | |
| R468 | " -103 | " | |
| R469 | " -153 | " | |
| R470 | " -474 | " | |
| R471 | " -103 | " | |
| R472 | " -103 | " | |
| R473 | " -105 | " | |
| R474 | " -222 | " | |
| R475 | " -333 | " | |
| R476 | " -683 | " | |
| R477 | " -103 | " | |
| R478 | " -333 | " | |
| R479 | — | — | |
| R480 | QRD161J-473 | CR | |
| R481 | " -333 | " | |
| R482 | " -473 | " | |
| R483 | " -823 | " | |
| R484 | " -103 | " | |
| R485 | — | — | |
| R486 | QRD161J-104 | CR | |
| R487 | " -105 | " | |
| R488 | " -103 | " | |
| R489 | " -473 | " | |
| R490 | " -473 | " | |
| R491 | " -104 | " | |
| R492 | QVZ3518-104 | VR | LP Cap. Discr. |
| R493 | " -473 | " | SP/EP Cap. Discr. |
| R494 | QRD161J-223 | CR | |
| R495 | " -473 | " | |
| R496 | " -333 | " | |
| R497 | " -333 | " | |
| R498 | " -824 | " | |
| R499 | " -474 | " | |
| R500 | " -333 | " | |
| R501 | " -102 | " | |
| R502 | " -562 | " | |
| R503 | " -182 | " | |
| R504 | " -103 | " | |
| R505 | " -824 | " | |
| R506 | " -105 | " | |
| R507 | " -104 | " | |
| R508 | " -473 | " | |
| R509 | " -823 | " | |
| R510 | " -124 | " | |
| R511 | " -563 | " | |
| R512 | " -563 | " | |
| R513 | " -104 | " | |
| R514 | " -563 | " | |
| R515 | " -184 | " | |
| R516 | " -104 | " | |
| R517 | " -473 | " | |
| R518 | " -563 | " | |
| R519 | — | — | |
| R520 | QRD161J-103 | CR | |
| R521 | " -103 | " | |
| R522 | " -103 | " | |
| R523 | " -223 | " | |
| R524 | " -333 | " | |
| R525 | " -562 | " | |
| R526 | " -562 | " | |
| R527 | " -104 | " | |
| R528 | " -105 | " | |
| R529 | " -103 | " | |
| R530 | " -104 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R531 | QVZ3520-223 | VR | H. Sync. Discr. |
| R532 | QRD161J-103 | CR | |
| R533 | 〃 -473 | 〃 | |
| R534 | 〃 -333 | 〃 | |
| R535 | QVZ3520-683 | VR | Drum Discr. |
| R536 | QRD161J-154 | CR | |
| R537 | 〃 -563 | 〃 | |
| R538 | 〃 -682 | 〃 | |
| R539 | 〃 -333 | 〃 | |
| R540 | 〃 -473 | 〃 | |
| R541 | 〃 -472 | 〃 | |
| R542 | 〃 -564 | 〃 | |
| R543 | 〃 -472 | 〃 | |
| R544 | 〃 -223 | 〃 | |
| R545 | 〃 -473 | 〃 | |
| R546 | 〃 -473 | 〃 | |
| R547 | 〃 -104 | 〃 | |
| R548 | 〃 -105 | 〃 | |
| R549 | 〃 -103 | 〃 | |
| R550 | 〃 -105 | 〃 | |
| R551 | 〃 -223 | 〃 | |
| R552 | 〃 -684 | 〃 | |
| R553 | 〃 -683 | 〃 | |
| R554 | 〃 -563 | 〃 | |
| R555 | 〃 -103 | 〃 | |
| R556 | — | — | |
| R557 | QRD161J-103 | CR | |
| R558 | 〃 -153 | 〃 | |
| R559 | 〃 -562 | 〃 | |
| R560 | 〃 -683 | 〃 | |
| R561 | PU56164 | VR | Picture Sharpness |
| R562 | QRD161J-102 | CR | |
| R563 | 〃 -333 | 〃 | |
| R564 | — | — | |
| R565 | — | — | |
| R566 | QRD161J-333 | CR | |
| R567 | 〃 -333 | 〃 | |
| R568 | 〃 -333 | 〃 | |
| R569 | 〃 -333 | 〃 | |
| R570 | 〃 -472 | 〃 | |
| R571 | 〃 -473 | 〃 | |
| R572 | 〃 -473 | 〃 | |
| R573 | 〃 -393 | 〃 | |
| R574 | 〃 -393 | 〃 | |
| R575 | 〃 -822 | 〃 | |
| R576 | 〃 -473 | 〃 | |
| R577 | 〃 -333 | 〃 | |
| R578 | 〃 -224 | 〃 | |
| R579 | QRD187J-223 | 〃 | |
| R580 | QRD161J-273 | 〃 | |
| R581 | 〃 -472 | 〃 | |
| R582 | 〃 -472 | 〃 | |
| R583 | 〃 -472 | 〃 | |
| R584 | 〃 -472 | 〃 | |
| R585 | 〃 -103 | 〃 | |
| R586 | 〃 -104 | 〃 | |
| R587 | — | — | |
| R588 | — | — | |
| R589 | — | — | |
| R590 | QRD161J-472 | CR | |
| R591 | 〃 -223 | 〃 | |
| R592 | 〃 -104 | 〃 | |
| R593 | 〃 -104 | 〃 | |
| R594 | 〃 -103 | 〃 | |
| R595 | 〃 -473 | 〃 | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R596 | QRD161J-472 | CR | |
| R597 | 〃 -102 | 〃 | |
| R598 | 〃 -472 | 〃 | |
| R599 | 〃 -472 | 〃 | |
| R600 | 〃 -822 | 〃 | |
| R601 | — | — | |
| R602 | QRD161J-222 | CR | |
| R603 | 〃 -222 | 〃 | |
| R604 | 〃 -823 | 〃 | |
| R605 | 〃 -222 | 〃 | |
| R606 | 〃 -104 | 〃 | |
| R607 | 〃 -103 | 〃 | |
| C401 | QET41CM-476 | E Cap | |
| C402 | QET61CM-226 | 〃 | |
| C403 | QFN31HK-102 | MY Cap | |
| C404 | QET61CM-476 | E Cap | |
| C405 | QCS31HJ-221 | C Cap | |
| C406 | QFN31HJ-333 | MY Cap | |
| C407 | QET61HM-105 | E Cap | |
| C408 | QET61CM-476 | 〃 | |
| C409 | QFN31HJ-682 | MY Cap | |
| C410 | 〃 -102 | 〃 | |
| C411 | 〃 -222 | 〃 | |
| C412 | 〃 -222 | 〃 | |
| C413 | QET61HM-105 | E Cap | |
| C414 | QFN31HK-102 | MY Cap | |
| C415 | 〃 -682 | 〃 | |
| C416 | 〃 -682 | 〃 | |
| C417 | 〃 -102 | 〃 | |
| C418 | QET41CM-476 | E Cap | |
| C419 | 〃 -476 | 〃 | |
| C420 | QEB41CM-106 | LL Cap | |
| C421 | 〃 -106 | 〃 | |
| C422 | 〃 -106 | 〃 | |
| C423 | 〃 -106 | 〃 | |
| C424 | QFN31HK-273 | MY Cap | |
| C425 | 〃 -333 | 〃 | |
| C426 | QCS31HJ-331 | C Cap | |
| C427 | QFN31HK-223 | MY Cap | |
| C428 | QCS31HJ-471 | C Cap | |
| C429 | QFN31HK-102 | MY Cap | |
| C430 | QFN41HJ-104 | 〃 | |
| C431 | QET61CM-476 | E Cap | |
| C432 | QFN31HK-823 | MY Cap | |
| C433 | QFN31HJ-104 | 〃 | |
| C434 | QFN31HK-273 | 〃 | |
| C435 | 〃 -473 | 〃 | |
| C436 | 〃 -102 | 〃 | |
| C437 | QCS31HJ-331 | C Cap | |
| C438 | QEN41HM-105 | NP Cap | |
| C439 | QFN31HK-104 | MY Cap | |
| C440 | 〃 -104 | 〃 | |
| C441 | 〃 -104 | 〃 | |
| C442 | QET61CM-476 | E Cap | |
| C443 | QFN31HK-104 | MY Cap | |
| C444 | QET61HM-105 | E Cap | |
| C445 | QFN31HK-222 | MY Cap | |

**[A/Servo/M]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C446 | QFN31HK-103 | MY Cap | |
| C447 | " -102 | " | |
| C448 | " -103 | " | |
| C449 | QET61CM-106 | E Cap | |
| C450 | QEN41HM-105 | NP Cap | |
| C451 | QCS31HJ-681 | C Cap | |
| C452 | QET61HM-105 | E Cap | |
| C453 | QET41AM-107 | " | |
| C454 | QET61CM-106 | " | |
| C455 | QCS31HJ-330 | C Cap | |
| C456 | QET41CM-106 | E Cap | |
| C457 | QFN31HK-122 | MY Cap | |
| C458 | QET41CM-106 | E Cap | |
| C459 | QCF31EZ-103 | C Cap | |
| C460 | " -103 | " | |
| C461 | QET61CM-106 | E Cap | |
| C462 | QCS31HJ-680 | C Cap | |
| C463 | " -680 | " | |
| C464 | QET41HM-474 | E Cap | |
| C465 | QET61CM-226 | " | |
| C466 | QFN31HK-152 | MY Cap | |
| C467 | QET61CM-476 | E Cap | |
| C468 | QFN31HK-103 | MY Cap | |
| C469 | QFM71HK-333 | " | |
| C470 | QEN61HM-474 | NP Cap | |
| C471 | QFN31HK-154 | MY Cap | |
| C472 | QEN61HM-474 | NP Cap | |
| C473 | QFN41HK-184 | MY Cap | |
| C474 | QCF31EZ-103 | C Cap | |
| C475 | QET61CM-106 | E Cap | |
| C476 | QCS31HJ-680 | C Cap | |
| C477 | " -680 | " | |
| C478 | – | – | |
| C479 | QFN31HK-223 | MY Cap | |
| C480 | " -223 | " | |
| C481 | QET61HM-474 | E Cap | |
| C482 | QET61CM-226 | " | |
| C483 | QFN31HK-152 | MY Cap | |
| C484 | QET61HM-105 | E Cap | |
| C485 | QFN31HK-103 | MY Cap | |
| C486 | QFP42AJ-152 | PP Cap | |
| C487 | " -102 | " | |
| C488 | " -392 | " | |
| C489 | – | – | |
| C490 | QFN31HK-102 | MY Cap | |
| C491 | " -103 | " | |
| C492 | QCS31HJ-470 | C Cap | |
| C493 | QFN31HK-273 | MY Cap | |
| C494 | QET41CM-226 | E Cap | |
| C495 | QFN31HK-683 | MY Cap | |
| C496 | QEN41CM-106 | NP Cap | |
| C497 | QEN41HM-474 | " | |
| C498 | " -105 | " | |
| C499 | – | – | |
| C500 | – | – | |
| C501 | QET61CM-476 | E Cap | |
| C502 | QFN31HK-222 | MY Cap | |
| C503 | QEK61CM-106 | E Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L401 | PU53618-101JD | Peaking Coil | |
| L402 | " -101JD | " | |
| L403 | " -101JD | " | |
| ⚠ X401 | PU47701 | Crystal | |
| ⚠CF401 | PU55812 | C. Resonator | |
| ⚠CF402 | " | " | |
| CN401 | PU49215-2 | Cap. Housing | |
| CN402 | " -2 | " | |
| CN403 | " -2 | " | |
| CN404 | " -6 | " | |
| CN405 | " -2 | " | |
| CN406 | " -8 | " | |
| CN407 | " -4 | " | |
| CN408 | – | – | |
| CN409 | PU49215-7 | Cap. Housing | |
| RA401 | RGLD6X474M | Resistor Array | |
| ⚠ | PQ10037-2-5 | Jack Board | |
| | SDSF3008Z | Tap. Screw | x 2 |
| | PU55778-1-3 | Hinge | x 2 |
| | PQ40404 | Dust Spacer | x 3 |
| | PQ40404-2-3 | " | |
| | PQ40404-3 | " | |
| | PU57215 | Spacer | x 6 |

**Note:** "x 2", "x 3" & "x 6" indicate two, Three and six pieces respectively.

## [A/S/Mechacon]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| **[Mechacon Section]** | | | |
| ⚠IC201 | LM339N | Integrated Circuit | or UPC339C |
| ⚠IC202 | M50740-609SP | " | |
| IC203 | M54519P | " | or UPA81C |
| IC204 | M50790SP | " | |
| ⚠IC205 | BA6209U | " | |
| ⚠IC206 | " | " | |
| IC207 | UPC1373H | " | or UPC1373HA |
| Q201 | – | – | |
| Q202 | 2SD636R,S | Transistor | |
| Q203 | DTC124EF | D. Transistor | |
| Q204 | 2SB641R,S | Transistor | |
| ⚠Q205 | 2SD637R,S | " | |
| Q206 | – | – | |
| Q207 | 2SD636R,S | Transistor | |
| Q208 | 2SD1055Q,R,S | " | |
| Q209 | DTC124EF | D. Transistor | |
| Q210 | " | " | |
| Q211 | DTA124EF | " | |
| Q212 | 2SD636R,S | Transistor | |
| Q213 | " | " | |
| Q214 | DTA124EF | D. Transistor | |
| Q215 | – | – | |
| Q216 | – | – | |
| Q217 | DTC124EF | D. Transistor | |
| Q221 | 2SC458C,D | Transistor | |
| D201 | RD7.5EB2 | Zener Diode | |
| D202 | 1SS133 | Diode | |
| D203 | RD3.0EB2 | Zener Diode | |
| D204 | RD7.5EB1 | " | |
| D205 | 1SS133 | Diode | |
| D206 | " | " | |
| D207 | " | " | |
| D208 | – | – | |
| D209 | 1SS133 | Diode | |
| D210 | RD8.2EB2 | Zener Diode | |
| D211 | 1SS133 | Diode | |
| D212 | " | " | |
| D213 | – | – | |
| D214 | RD10EB2 | Zener Diode | |
| ⚠D215 | RD13EB1 | " | or TZ12A |
| ⚠D216 | RD12EB2 | " | |
| D217 | 1SS133 | Diode | |
| D218 | " | " | |
| D219 | " | " | |
| D220 | " | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| D221 | 1SS133 | Diode | |
| D222 | PD48PI2 | Photo Transistor | |
| ⚠D223 | RD15EB1 | Zener Diode | |
| D224 | – | – | |
| D225 | – | – | |
| D226 | – | – | |
| D227 | 1SS133 | Diode | |
| ⚠D228 | 10E2 | " | |
| D229 | – | – | |
| D230 | – | – | |
| D231 | 1SS133 | Diode | |
| D232 | – | – | |
| D233 | – | – | |
| D234 | – | – | |
| D235 | – | – | |
| D236 | – | – | |
| D237 | 1SS133 | Diode | |
| D238 | RD13EB1 | Zener Diode | |
| D239 | MA27WA | Diode | |
| D240 | – | – | |
| D241 | – | – | |
| D242 | – | – | |
| D243 | – | – | |
| D244 | 1SS133 | Diode | |
| D245 | " | " | |
| D246 | – | – | |
| D247 | – | – | |
| D248 | RD15EB | Zener Diode | |
| R201 | QRD161J-102 | CR | |
| R202 | – | – | |
| R203 | QRD161J-102 | CR | |
| R204 | " -103 | " | |
| R205 | " -274 | " | |
| R206 | " -274 | " | |
| R207 | " -104 | " | |
| R208 | " -184 | " | |
| R209 | " -274 | " | |
| R210 | " -103 | " | |
| R211 | " -473 | " | |
| R212 | " -683 | " | |
| R213 | – | – | |
| R214 | QRD161J-104 | CR | |
| R215 | " -472 | " | |
| R216 | " -472 | " | |
| R217 | " -472 | " | |
| R218 | " -473 | " | |
| R219 | " -473 | " | |
| R220 | – | – | |
| R221 | – | – | |
| R222 | QRD161J-472 | CR | |
| R223 | " -472 | " | |
| R224 | " -472 | " | |
| R225 | " -472 | " | |

**[A/S/Mechacon]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R226 | QRD161J-103 | CR | |
| R227 | " -472 | " | |
| R228 | " -105 | " | |
| R229 | " -183 | " | |
| R230 | — | — | |
| R231 | QRD161J-103 | CR | |
| R232 | " -473 | " | |
| R233 | " -103 | " | |
| R234 | " -103 | " | |
| R235 | " -472 | " | |
| R236 | " -103 | " | |
| R237 | " -472 | " | |
| R238 | " -472 | " | |
| R239 | " -101 | " | |
| R240 | " -682 | " | |
| R241 | " -472 | " | |
| R242 | " -472 | " | |
| R243 | — | — | |
| R244 | — | — | |
| R245 | QRD161J-472 | CR | |
| R246 | " -472 | " | |
| R247 | " -472 | " | |
| R248 | " -101 | " | |
| R249 | — | — | |
| R250 | — | — | |
| R251 | — | — | |
| R252 | — | — | |
| R253 | — | — | |
| R254 | QRD161J-103 | CR | |
| R255 | " -223 | " | |
| R256 | — | — | |
| R257 | — | — | |
| R258 | — | — | |
| R259 | — | — | |
| R260 | QRD161J-682 | CR | |
| R261 | " -183 | " | |
| R262 | " -273 | " | |
| R263 | " -103 | " | |
| R264 | " -104 | " | |
| R265 | " -104 | " | |
| R266 | " -104 | " | |
| R267 | " -104 | " | |
| R268 | QRD162J-104 | " | |
| R269 | QRD161J-472 | " | |
| R270 | " -103 | " | |
| R271 | " -223 | " | |
| R272 | " -222 | " | |
| R273 | — | — | |
| R274 | QRD161J-124 | CR | |
| R275 | " -124 | " | |
| R276 | — | — | |
| R277 | — | — | |
| R278 | — | — | |
| R279 | — | — | |
| R280 | QRD161J-104 | CR | |
| R281 | — | — | |
| R282 | — | — | |
| R283 | — | — | |
| R284 | — | — | |
| R285 | QRD162J-154 | CR | |
| R286 | QRD161J-5R6 | " | |
| R287 | " -102 | " | |
| R288 | " -103 | " | |
| R289 | " -104 | " | |
| R290 | " -102 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R291 | QRD161J-473 | CR | |
| R292 | " -104 | " | |
| R293 | " -224 | " | |
| R294 | " -473 | " | |
| R295 | " -274 | " | |
| R296 | " -473 | " | |
| R297 | — | — | |
| R298 | QRD161J-153 | CR | |
| R299 | " -103 | " | |
| R300 | " -682 | " | |
| R301 | " -123 | " | |
| R302 | " -103 | " | |
| R303 | QRD182J-223 | " | |
| R304 | QRD161J-103 | " | |
| R305 | — | — | |
| R306 | — | — | |
| R307 | — | — | |
| R308 | — | — | |
| R309 | — | — | |
| R310 | — | — | |
| R311 | — | — | |
| R312 | — | — | |
| R313 | — | — | |
| R314 | QRD161J-104 | CR | |
| R315 | " -821 | " | |
| R316 | " -561 | " | |
| R317 | " -561 | " | |
| R318 | " -561 | " | |
| R319 | " -561 | " | |
| R320 | " -561 | " | |
| R321 | " -102 | " | |
| R336 | QRD161J-103 | CR | |
| ⚠ R337 | PU52108-4R7 | Posistor | or PU52108-4R7T |
| C201 | — | — | |
| C202 | QEK61HM-105 | E Cap | |
| C203 | QCS31HJ-390 | C Cap | |
| C204 | " -390 | " | |
| C205 | QEE51CM-475 | T Cap | |
| C206 | QFN31HJ-224 | MY Cap | |
| C207 | QET41EM-475 | E Cap | |
| C208 | QFN31HK-103 | MY Cap | |
| C209 | " -103 | " | |
| C210 | — | — | |
| C211 | QFN31HK-103 | MY Cap | |
| C212 | QFN31HJ-683 | " | |
| C213 | QEK61AM-476 | E Cap | |
| C214 | QEK61CM-476 | " | |
| C215 | QET61HM-225 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C216 | QEK61CM-336 | E Cap | |
| C217 | QEE41EM-225 | T Cap | |
| C218 | QCF31HP-223 | C Cap | |
| C219 | ″ -223 | ″ | |
| C220 | – | – | |
| C221 | – | – | |
| C222 | QFN31HK-103 | MY Cap | |
| C223 | – | – | |
| C224 | QFZ9011-184 | MP Cap | |
| C225 | QFN31HK-223 | MY Cap | |
| C226 | QEK61CM-476 | E Cap | |
| C227 | QEE51EM-475 | T Cap | |
| C228 | – | – | |
| C229 | – | – | |
| C230 | QFN41HJ-223 | MY Cap | |
| C231 | – | – | |
| C232 | – | – | |
| C233 | QCF11HP-473 | C Cap | |
| C234 | QFN41HJ-823 | MY Cap | |
| C235 | ″ -823 | ″ | |
| C236 | QFN31HJ-333 | ″ | |
| ⚠CF201 | PU56292 | Ceramic Filter | |
| L201 | PU52612 | Resonator | |
| L202 | – | – | |
| L203 | PU53618-101D | Peaking Coil | |
| L204 | PU53223-101G | ″ | |
| L205 | PU53618-101D | Coil | |
| L206 | – | – | |
| L207 | PU53223-1R0KG | Peaking Coil | |
| CN201 | PU49215-4R | Cap. Housing | |
| CN202 | ″ -4Y | ″ | |
| CN203 | ″ -8 | ″ | |
| CN204 | ″ -4 | ″ | |
| CN205 | – | – | |
| CN206 | – | – | |
| CN207 | – | – | |
| CN208 | PU49215-109 | Cap. Housing | |
| CN209 | ″ -4 | ″ | |
| CN210 | ″ -3Y | ″ | |
| CN211 | ″ -4 | ″ | |
| CN212 | ″ -9 | ″ | |
| CN213 | – | – | |
| CN214 | PU49215-107 | Cap. Housing | |
| RA201 | RGLD5X474M | Resistor Array | or EXB-P85474M |
| RA202 | RGLD4X472M | ″ | or EXB-P84472M |
| RA203 | RGLD5X103M | ″ | or EXB-P85103M |
| RA204 | RGLD4X103M | ″ | or EXB-P84103M |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| SW201 | PU55852-1-2 | Slide Switch | REMAIN |
| SW202 | ″ -2-2 | ″ | MEMORY |
| | PU56225-1-4 | Shield Cover (1) | IFR |
| | PU56226-1-5 | ″ (2) | ″ |
| | PU56772-1-2 | ″ (3) | ″ |
| | PU57245 | Insulator | |

### 6.2.5 FM Audio (FMA) Circuit Board Ass'y $\boxed{0}$ $\boxed{5}$ ........................ PU11034G-1

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | HA11752 | Integrated Circuit | |
| IC 2 | AN6392 | " | |
| IC 3 | TK15021 | " | |
| IC 4 | " | " | |
| IC 5 | TK10322 | " | |
| IC 6 | TK15021 | " | |
| IC 7 | M5218P | " | |
| IC 8 | " | " | |
| IC 9 | TA7324P | " | |
| IC10 | M5218P | " | |
| IC11 | TA7324P | " | |
| IC12 | M5218P | " | |
| ⚠ IC13 | AN6391S | Flat I.C. | |
| ⚠ IC14 | " | " | |
| IC15 | EHM-X42U50B | Integrated Circuit | |
| IC16 | " | " | |
| IC17 | BA226F | Flat I.C. | |
| IC18 | BA634F | " | |
| IC19 | M5218P | Integrated Circuit | |
| IC20 | 7VT06 | " | |
| IC21 | " | " | |
| Q 1 | 2SC3053 | Chip Transistor | |
| Q 2 | " | " | |
| Q 3 | " | " | |
| Q 4 | " | " | |
| Q 5 | DTC124EF | D. Transistor | |
| Q 6 | " | " | |
| Q 7 | " | " | |
| Q 8 | " | " | |
| Q 9 | 2SC2021R,S | Transistor | |
| ⚠ Q10 | TA78L005AP | Reg. Transistor | |
| Q11 | DTC124EF | D. Transistor | |
| Q12 | 2SD545E,F | Transistor | |
| Q13 | 2SC3053 | Chip Transistor | |
| Q14 | DTC124EF | D. Transistor | |
| Q15 | 2SD545E,F | Transistor | |
| Q16 | " | " | |
| D 1 | — | — | |
| D 2 | — | — | |
| D 3 | — | — | |
| D 4 | — | — | |
| D 5 | MC2838 | Chip Diode | |
| D 6 | MC2836 | " | |
| D 7 | — | — | |
| D 8 | — | — | |
| D 9 | MC2836 | Chip Diode | |
| D10 | MC2838 | " | |
| D11 | MC2836 | " | |
| D12 | — | — | |
| D13 | — | — | |
| D14 | MC2838 | Chip Diode | |
| D15 | OA90 | Diode | |
| D16 | MC2838 | Chip Diode | |
| D17 | MC2836 | " | |
| D18 | " | " | |
| D19 | 1SS133 | Diode | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R 1 | QRS188J-272YN | Chip R | |
| R 2 | " -100YN | " | |
| R 3 | " -272YN | " | |
| R 4 | " -272YN | " | |
| R 5 | " -100YN | " | |
| R 6 | " -471YN | " | |
| R 7 | " -471YN | " | |
| R 8 | " -561YN | " | |
| R 9 | " -103YN | " | |
| R10 | " -123YN | " | |
| R11 | " -123YN | " | |
| R12 | " -103YN | " | |
| R13 | " -561YN | " | |
| R14 | " -102YN | " | |
| R15 | — | — | |
| R16 | QRS188J-224YN | Chip R | |
| R17 | " -223YN | " | |
| R18 | " -471YN | " | |
| R19 | " -561YN | " | |
| R20 | " -121YN | " | |
| R21 | " -102YN | " | |
| R22 | " -393YN | " | |
| R23 | " -102YN | " | |
| R24 | QVZ3531-472 | VR | CH-1 E-E |
| R25 | " -472 | " | CH-2 E-E |
| R26 | QRS188J-823YN | Chip R | |
| R27 | " -124YN | " | |
| R28 | " -823YN | " | |
| R29 | " -124YN | " | |
| R30 | QVZ3531-472 | VR | CH-1 FMA E-E |
| R31 | " -472 | " | CH-2 FMA E-E |
| R32 | QRS188J-123YN | Chip R | |
| R33 | " -123YN | " | |
| R34 | " -473YN | " | |
| R35 | — | — | |
| R36 | QRS188J-183YN | Chip R | |
| R37 | " -473YN | " | |
| R38 | — | — | |
| R39 | QRS188J-183YN | Chip R | |
| R40 | " -123YN | " | |
| R41 | " -124YN | " | |
| R42 | " -123YN | " | |
| R43 | " -124YN | " | |
| R44 | " -222YN | " | |
| R45 | " -222YN | " | |
| R46 | QRD161J-101 | CR | |
| R47 | QRS188J-473YN | Chip R | |
| R48 | " -473YN | " | |
| R49 | " -473YN | " | |
| R50 | " -473YN | " | |
| R51 | " -124YN | " | |
| R52 | " -124YN | " | |
| R53 | " -222YN | " | |
| R54 | " -472YN | " | |
| R55 | " -472YN | " | |
| R56 | " -222YN | " | |
| R57 | " -124YN | " | |
| R58 | " -124YN | " | |
| R59 | " -222YN | " | |
| R60 | " -222YN | " | |
| R61 | — | — | |
| R62 | QRS188J-124YN | Chip R | |
| R63 | " -103YN | " | |
| R64 | " -272YN | " | |
| R65 | " -124YN | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R66 | QRS188J-124YN | Chip R | |
| R67 | ″ -272YN | ″ | |
| R68 | ″ -103YN | ″ | |
| R69 | ″ -124YN | ″ | |
| R70 | ″ -122YN | ″ | |
| R71 | ″ -223YN | ″ | |
| R72 | ″ -332YN | ″ | |
| R73 | ″ -124YN | ″ | |
| R74 | ″ -392YN | ″ | |
| R75 | ″ -392YN | ″ | |
| R76 | QVZ3531-472 | VR | CH-2 LEVEL ADJ. |
| R77 | ″ -472 | ″ | CH-1 LEVEL ADJ. |
| R78 | — | — | |
| R79 | — | — | |
| R80 | — | — | |
| R81 | — | — | |
| R82 | QRS188J-124YN | Chip R | |
| R83 | ″ -124YN | ″ | |
| R84 | ″ -392YN | ″ | |
| R85 | ″ -392YN | ″ | |
| R86 | ″ -124YN | ″ | |
| R87 | ″ -124YN | ″ | |
| R88 | ″ -392YN | ″ | |
| R89 | ″ -392YN | ″ | |
| R90 | — | — | |
| R91 | QRS188J-102Y | Chip R | |
| R92 | — | — | |
| R93 | QRS188J-102Y | Chip R | |
| R94 | ″ -122YN | ″ | |
| R95 | ″ -223YN | ″ | |
| R96 | ″ -332YN | ″ | |
| R97 | ″ -124YN | ″ | |
| R98 | ″ -222YN | ″ | |
| R99 | ″ -562YN | ″ | |
| R100 | ″ -104YN | ″ | |
| R101 | ″ -104YN | ″ | |
| R102 | ″ -223YN | ″ | |
| R103 | ″ -562YN | ″ | |
| R104 | ″ -562YN | ″ | |
| R105 | ″ -822YN | ″ | |
| R106 | ″ -562YN | ″ | |
| R107 | ″ -562YN | ″ | |
| R108 | QVZ3531-472 | VR | CH-1 REC DEV. |
| R109 | QRS188J-220YN | Chip R | |
| R110 | QRD182J-225 | CR | |
| R111 | QRS188J-333YN | Chip R | |
| R112 | ″ -183YN | ″ | |
| R113 | ″ -562YN | ″ | |
| R114 | QVZ3531-222 | VR | CARR. ADJ. |
| R115 | QRD182J-392 | CR | |
| R116 | QRS188J-102YN | Chip R | |
| R117 | QVZ3531-102 | VR | 1.3M REC LEVEL |
| R118 | — | — | |
| R119 | — | — | |
| R120 | QRS188J-123YN | Chip R | |
| R121 | ″ -102YN | ″ | |
| R122 | ″ -102YN | ″ | |
| R123 | ″ -123YN | ″ | |
| R124 | ″ -0R0Y | ″ | |
| R125 | ″ -222YN | ″ | |
| R126 | QVZ3531-103 | VR | CH-1 PB LEVEL |
| R127 | QRS188J-102YN | Chip R | |
| R128 | ″ -102YN | ″ | |
| R129 | — | — | |
| R130 | QRS188J-222YN | Chip R | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R131 | QRS188J-562YN | Chip R | |
| R132 | ″ -104YN | ″ | |
| R133 | ″ -223YN | ″ | |
| R134 | ″ -562YN | ″ | |
| R135 | ″ -104YN | ″ | |
| R136 | ″ -822YN | ″ | |
| R137 | QVZ3531-472 | VR | CH-2 REC DEV. |
| R138 | QRS188J-220YN | Chip R | |
| R139 | QRD182J-225 | CR | |
| R140 | QRS188J-333YN | Chip R | |
| R141 | ″ -183YN | ″ | |
| R142 | ″ -562YN | ″ | |
| R143 | QVZ3531-222 | VR | CH-2 CARR. ADJ. |
| R144 | QRD182J-222 | CR | |
| R145 | QRS188J-102YN | Chip R | |
| R146 | QVZ3531-102 | VR | 1.7M REC LEVEL |
| R147 | — | — | |
| R148 | — | — | |
| R149 | QRS188J-272YN | Chip R | |
| R150 | ″ -102YN | ″ | |
| R151 | ″ -102YN | ″ | |
| R152 | ″ -0R0Y | ″ | |
| R153 | ″ -222YN | ″ | |
| R154 | QVZ3531-103 | VR | CH-2 PB LEVEL |
| R155 | QRS188J-102YN | Chip R | |
| R156 | ″ -104YN | ″ | |
| R157 | ″ -103YN | ″ | |
| R158 | ″ -472YN | ″ | |
| R159 | ″ -102YN | ″ | |
| R160 | ″ -104YN | ″ | |
| R161 | ″ -103YN | ″ | |
| R162 | ″ -472YN | ″ | |
| R163 | — | — | |
| R164 | — | — | |
| R165 | — | — | |
| R166 | — | — | |
| R167 | — | — | |
| R168 | — | — | |
| R169 | — | — | |
| R170 | — | — | |
| R171 | QRS188J-223YN | Chip R | |
| R172 | QVZ3531-154 | VR | CH-2 SW |
| R173 | QRS188J-561YN | Chip R | |
| R174 | ″ -183YN | ″ | |
| R175 | QVZ3531-154 | VR | CH-1 SW |
| R176 | QRS188J-183YN | Chip R | |
| R177 | ″ -682YN | ″ | |
| R178 | QRD161J-122 | CR | |
| R179 | QRS188J-681YN | Chip R | |
| R180 | ″ -682YN | ″ | |
| R181 | ″ -272YN | ″ | |
| R182 | ″ -153YN | ″ | |
| R183 | ″ -272YN | ″ | |
| R184 | ″ -153YN | ″ | |
| R185 | ″ -103YN | ″ | |
| R186 | ″ -103YN | ″ | |
| R187 | ″ -223YN | ″ | |
| R188 | ″ -472YN | ″ | |
| R189 | ″ -222YN | ″ | |
| R190 | ″ -391YN | ″ | |
| R191 | ″ -272YN | ″ | |
| R192 | ″ -472YN | ″ | |
| R193 | ″ -272YN | ″ | |
| R194 | ″ -332YN | ″ | |
| R195 | ″ -103YN | ″ | |

## [FM Audio]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R196 | QRS188J-472YN | Chip R | |
| R197 | QRD161J-220 | CR | |
| R198 | — | — | |
| R199 | QRS188J-332YN | Chip R | |
| R200 | ″ -103YN | ″ | |
| R201 | ″ -151YN | ″ | |
| R202 | ″ -331YN | ″ | |
| R203 | ″ -182YN | ″ | |
| R204 | ″ -124YN | ″ | |
| R205 | ″ -682YN | ″ | |
| R206 | ″ -124YN | ″ | |
| R207 | ″ -183YN | ″ | |
| R208 | ″ -183YN | ″ | |
| R209 | ″ -124YN | ″ | |
| R210 | ″ -221YN | ″ | |
| R211 | ″ -682YN | ″ | |
| R212 | ″ -124YN | ″ | |
| R213 | — | — | |
| R214 | QRS188J-822YN | Chip R | |
| R215 | ″ -822YN | ″ | |
| R216 | — | — | |
| R217 | QRS188J-123YN | Chip R | |
| R218 | ″ -123YN | ″ | |
| R219 | ″ -104YN | ″ | |
| R220 | — | — | |
| R221 | — | — | |
| R222 | QRS188J-123YN | Chip R | |
| R223 | ″ -104YN | ″ | |
| R224 | ″ -104YN | ″ | |
| R225 | ″ -103YN | ″ | |
| R226 | ″ -152YN | ″ | |
| R227 | ″ -102YN | ″ | |
| R228 | ″ -102YN | ″ | |
| R229 | ″ -222YN | ″ | |
| R230 | ″ -102YN | ″ | |
| R231 | ″ -102YN | ″ | |
| R232 | ″ -103YN | ″ | |
| R233 | ″ -103YN | ″ | |
| R234 | ″ -821YN | ″ | |
| R235 | ″ -821YN | ″ | |
| R236 | ″ -103YN | ″ | |
| R237 | ″ -103YN | ″ | |
| R238 | ″ -0R0Y | ″ | |
| R239 | — | — | |
| R240 | QRS188J-122YN | Chip R | |
| R241 | — | — | |
| R242 | — | — | |
| R243 | QRS188J-222YN | Chip R | |
| R244 | ″ -222YN | ″ | |
| R245 | — | — | |
| R246 | QRS188J-103YN | Chip R | |
| R247 | ″ -105YN | ″ | |
| R248 | ″ -102YN | ″ | |
| R249 | ″ -0R0Y | ″ | |
| R250 | ″ -0R0Y | ″ | |
| R251 | — | — | |
| R252 | QRD161J-221 | CR | |
| | | | |
| B21 | QRS188J-0R0Y | Chip R | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C 1 | QCT81CH-470ZL | Chip Cap | |
| C 2 | QEPA1HM-105 | NP Cap | |
| C 3 | QCY81EK-223ZL | Chip Cap | |
| C 4 | ″ -223ZL | ″ | |
| C 5 | ″ -223ZL | ″ | |
| C 6 | ″ -223ZL | ″ | |
| C 7 | ″ -223ZL | ″ | |
| C 8 | QCT81CH-181ZL | ″ | |
| C 9 | ″ -181ZL | ″ | |
| C10 | QCS81HJ-102ZL | ″ | |
| C11 | QER41HM-105 | E Cap | |
| C12 | QCS81HJ-102ZL | Chip Cap | |
| C13 | QER41HM-105 | E Cap | |
| C14 | QCY81EK-223ZL | Chip Cap | |
| C15 | QER40JM-336 | E Cap | |
| C16 | QCY81EK-223ZL | Chip Cap | |
| C17 | QCT81CH-331ZL | ″ | |
| C18 | QER41HM-224 | E Cap | |
| C19 | QER40JM-336 | ″ | |
| C20 | QCY81EK-223ZL | Chip Cap | |
| C21 | QER40JM-336 | E Cap | |
| C22 | QCY81EK-223ZL | Chip Cap | |
| C23 | ″ -223ZL | ″ | |
| C24 | ″ -223ZL | ″ | |
| C25 | QCT81CH-270ZL | ″ | |
| C26 | QER41HM-105 | E Cap | |
| C27 | QCY81EK-223ZL | Chip Cap | |
| C28 | ″ -223ZL | ″ | |
| C29 | QER41CM-226 | E Cap | |
| C30 | QCS81HJ-102ZL | Chip Cap | |
| C31 | QER41EM-475 | E Cap | |
| C32 | ″ -475 | ″ | |
| C33 | ″ -475 | ″ | |
| C34 | ″ -475 | ″ | |
| C35 | ″ -475 | ″ | |
| C36 | ″ -475 | ″ | |
| C37 | ″ -475 | ″ | |
| C38 | ″ -475 | ″ | |
| C39 | ″ -475 | ″ | |
| C40 | ″ -475 | ″ | |
| C41 | ″ -475 | ″ | |
| C42 | ″ -475 | ″ | |
| C43 | ″ -475 | ″ | |
| C44 | — | — | |
| C45 | QER41EM-475 | E Cap | |
| C46 | — | — | |
| C47 | QER41EM-475 | E Cap | |
| C48 | ″ -475 | ″ | |
| C49 | QER40JM-226 | ″ | |
| C50 | ″ -226 | ″ | |
| C51 | QER41CM-476 | ″ | |
| C52 | QER41HM-105 | ″ | |
| C53 | QCY81HK-562ZL | Chip Cap | |
| C54 | QEPA1EM-475 | NP Cap | |
| C55 | QER41HM-105 | E Cap | |
| C56 | QCY81HK-562ZL | Chip Cap | |
| C57 | QEPA1EM-475 | NP Cap | |
| C58 | QER41HM-105 | E Cap | |
| C59 | QER41EM-475 | ″ | |
| C60 | ″ -475 | ″ | |
| C61 | QER41HM-105 | ″ | |
| C62 | QER41CM-476 | ″ | |
| C63 | QER40JM-226 | ″ | |
| C64 | ″ -476 | ″ | |
| C65 | ″ -476 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C66 | QER40JM-226 | E Cap | |
| C67 | – | – | |
| C68 | – | – | |
| C69 | – | – | |
| C70 | – | – | |
| C71 | QER41EM-475 | E Cap | |
| C72 | 〃 -475 | 〃 | |
| C73 | QER40JM-107 | 〃 | |
| C74 | QER41EM-475 | 〃 | |
| C75 | QER40JM-107 | 〃 | |
| C76 | QER41EM-475 | 〃 | |
| C77 | QER41CM-336 | 〃 | |
| C78 | PU54820G-822 | PP Cap | |
| C79 | QER41CM-106 | E Cap | |
| C80 | 〃 -106 | 〃 | |
| C81 | 〃 -106 | 〃 | |
| C82 | 〃 -106 | 〃 | |
| C83 | 〃 -106 | 〃 | |
| C84 | 〃 -106 | 〃 | |
| C85 | QER40JM-107 | 〃 | |
| C86 | QER41EM-475 | 〃 | |
| C87 | QEPA1EM-475 | NP Cap | |
| C88 | QCT81CH-101ZL | Chip Cap | |
| C89 | QCS81HJ-102ZL | 〃 | |
| C90 | QCY81EK-223ZL | 〃 | |
| C91 | QCT81CH-820ZL | 〃 | |
| C92 | QCY81EK-223ZL | 〃 | |
| C93 | QCT81CH-101ZL | 〃 | |
| C94 | – | – | |
| C95 | QCY81EK-223ZL | Chip Cap | |
| C96 | QEPA1EM-475 | NP Cap | |
| C97 | QER40JM-476 | E Cap | |
| C98 | QER41CM-106 | 〃 | |
| C99 | PU54820G-822 | PP Cap | |
| C100 | QCY81HK-562ZL | Chip Cap | |
| C101 | QER41CM-106 | E Cap | |
| C102 | QER40JM-476 | 〃 | |
| C103 | QCT81CH-101ZL | Chip Cap | |
| C104 | QCF81EP-334ZL | 〃 | |
| C105 | QER40JM-336 | E Cap | |
| C106 | QCS81HJ-332ZL | Chip Cap | |
| C107 | – | – | |
| C108 | QER40JM-476 | E Cap | |
| C109 | PU54820G-822 | PP Cap | |
| C110 | QER41CM-106 | E Cap | |
| C111 | 〃 -106 | 〃 | |
| C112 | 〃 -106 | 〃 | |
| C113 | QEPA1EM-475 | NP Cap | |
| C114 | QER41CM-106 | E Cap | |
| C115 | QER40JM-107 | 〃 | |
| C116 | QER41EM-475 | 〃 | |
| C117 | QEPA1EM-475 | NP Cap | |
| C118 | QCT81CH-101ZL | Chip Cap | |
| C119 | QCS81HJ-102ZL | 〃 | |
| C120 | QCY81EK-223ZL | 〃 | |
| C121 | QCT81CH-820ZL | 〃 | |
| C122 | QCY81EK-223ZL | 〃 | |
| C123 | QCS81HJ-102ZL | 〃 | |
| C124 | QCT81CH-101ZL | 〃 | |
| C125 | – | – | |
| C126 | QCY81EK-223ZL | Chip Cap | |
| C127 | QER40JM-476 | E Cap | |
| C128 | QER41CM-106 | 〃 | |
| C129 | PU54820G-822 | PP Cap | |
| C130 | QCY81HK-562ZL | Chip Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C131 | QER41CM-106 | E Cap | |
| C132 | QER40JM-476 | 〃 | |
| C133 | QCS81HJ-332ZL | Chip Cap | |
| C134 | QCT81CH-101ZL | 〃 | |
| C135 | QCF81EP-334ZL | 〃 | |
| C136 | QER40JM-336 | E Cap | |
| C137 | 〃 -476 | 〃 | |
| C138 | – | – | |
| C139 | QFZ9011-104 | MY Cap | |
| C140 | QER41CM-226 | E Cap | |
| C141 | QFZ9011-104 | MY Cap | |
| C142 | QCS81HJ-102ZL | Chip Cap | |
| C143 | 〃 -102ZL | 〃 | |
| C144 | QER41CM-476 | E Cap | |
| C145 | 〃 -106 | 〃 | |
| C146 | 〃 -106 | 〃 | |
| C147 | QCT81CH-820ZL | Chip Cap | |
| C148 | QCY81EK-223ZL | 〃 | |
| C149 | QER41CM-106 | E Cap | |
| C150 | 〃 -106 | 〃 | |
| C151 | 〃 -106 | 〃 | |
| C152 | 〃 -106 | 〃 | |
| C153 | 〃 -476 | 〃 | |
| C154 | 〃 -476 | 〃 | |
| C155 | QER40JM-336 | 〃 | |
| C156 | 〃 -336 | 〃 | |
| C157 | QER41CM-226 | 〃 | |
| C158 | QER40JM-336 | 〃 | |
| C159 | 〃 -336 | 〃 | |
| C160 | QCT81CH-101ZL | Chip Cap | |
| C161 | 〃 -101ZL | 〃 | |
| C162 | QER41CM-106 | E Cap | |
| C163 | 〃 -106 | 〃 | |
| C164 | QCY81HK-103ZL | Chip Cap | |
| C165 | 〃 -103ZL | 〃 | |
| C166 | 〃 -103ZL | 〃 | |
| C167 | QER41EM-475 | E Cap | |
| C168 | 〃 -475 | 〃 | |
| C169 | – | – | |
| C170 | QCY81EK-223ZL | Chip Cap | |
| C171 | QER41CM-476 | E Cap | |
| C172 | QCY81HK-103ZL | Chip Cap | |
| C173 | 〃 -103ZL | 〃 | |
| C174 | QCS81HJ-152ZL | 〃 | |
| C175 | QFN41HJ-102 | MY Cap | |
| C176 | 〃 -102 | 〃 | |
| C177 | QCY81EK-223ZL | Chip Cap | |
| C178 | 〃 -223ZL | 〃 | |
| C179 | – | – | |
| C180 | – | – | |
| C181 | QER41CM-476 | E Cap | |
| C182 | QCY81EK-223ZL | Chip Cap | |
| | | | |
| ⚠ L 1 | PU53223-101J | Peaking Coil | |
| L 2 | 〃 -221J | 〃 | |
| L 3 | 〃 -101J | 〃 | |
| L 4 | 〃 -101J | 〃 | |
| ⚠ L 5 | 〃 -101J | 〃 | |
| L 6 | 〃 -101J | 〃 | |
| L 7 | – | – | |
| L 8 | PU53607-152 | Coil | |
| L 9 | PU53223-101J | Peaking Coil | |
| L10 | – | – | |
| L11 | PU53607-152 | Coil | |

## [FM Audio]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| T 1 | PU56175 | S. Trans. | |
| T 2 | " | " | |
| T 3 | PU56176 | L.P.F. | |
| T 4 | " | " | |
| T 5 | PU56177 | B.P.F. | |
| T 6 | PU56177-2 | " | |
| ⚠ CP 1 | ICP-F10 | IC Protector | |
| ⚠ CP 2 | " | " | |
| ⚠ CP 3 | " | " | |
| | PU56008 | Test Pin | TP1-4<br>TP9-12 |
| CN 1 | PU49215-106 | Cap. Housing | |
| CN 2 | " -104 | " | |
| CN 3 | " -105 | " | |
| CN 4 | – | – | |
| CN 5 | PU49215-102 | Cap. Housing | |
| CN 6 | " -104 | " | |
| CN 7 | " -4 | " | |
| CN 8 | " -105 | " | |
| CN 9 | " -106 | " | |
| CN10 | – | – | |
| CN11 | PU49215-6 | Cap. Housing | |
| CN12 | " -103 | " | |
| CN13 | " -104 | " | |
| CN14 | " -4 | " | |
| CN15 | " -4 | " | |
| CN16 | – | – | |
| CN17 | PU49215-103 | Cap. Housing | |
| CN18 | " -102 | " | |
| CN19 | " -104 | " | |
| CN20 | – | – | |
| CN21 | PU49215-102 | Cap. Housing | |
| | PQ40406 | P.W.B. Holder | x 2 |
| | DPSP3006Z | Screw | x 2 |
| | PU34743 | Shield Case (A) | |
| | PU34744-1-1 | Shield Cover | |

**Note:** "x 2" indicate two pieces respectively.

## 6.2.16 Timing Circuit Board Ass'y $\boxed{3}$ $\boxed{2}$ . . PU58114B

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| Q 1 | 2SA937R | Transistor | |
| Q 2 | 2SC2021R | " | |
| Q 3 | " | " | |
| D 1 | MA150 | Diode | |
| D 2 | " | " | |
| D 3 | " | " | |
| D 4 | " | " | |
| D 5 | " | " | |
| R 1 | QRD162J-333 | CR | |
| R 2 | " -563 | " | |
| R 3 | " -182 | " | |
| R 4 | " -102 | " | |
| R 5 | " -823 | " | |
| R 6 | " -563 | " | |
| R 7 | " -333 | " | |
| R 8 | " -563 | " | |
| C 1 | QET61AM-336 | E Cap | |
| CN 1 | PU49215-7 | Cap. Housing | |
| | PU56838 | PWB Bracket | |
| | DPSP3006Z | Screw | x 2 |

V11928

ADDITION

# MODEL HR-D725U

## SECTION 7
## DIAGRAMS AND CIRCUIT BOARDS

- AUDIO/SERVO/MECHACON
- FM AUDIO
- TIMING

## SECTION 8
## ELECTRICAL PARTS LIST

This is an addition to the No. 8321 Service Manual for the model HR-D725U.

No. 8321
May 1985

# SECTION 8
# ELECTRICAL PARTS LIST

## SAFETY PRECAUTION

**Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.**

### ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS—All resistance values are in ohms (Ω), unless otherwise indicated.

k : 1,000 (Kilo)
M : 1,000,000 (Mega)

Chip R : Chip Resistor
Chip VR : Chip Variable Resistor
Comp. R : Composition Resistor
CR : Carbon Film Resistor
FR : Fusible Resistor
MFR : Metal Film Resistor
MPR : Metal Plate Resistor
OMR : Oxide Metal Film Resistor
PMR : Precision Metal Film Resistor
UFR : Unflammable Resistor
VR : Variable Resistor (Potentiometer)
WR : Wire Wound Resistor

CAPACITORS—All capacitance values are in μF, unless otherwise indicated.

pF : μμF (Pico farad)

C Cap : Ceramic Capacitor
Chip Cap : Chip Capacitor
Chip T Cap : Chip Tantalum Capacitor
E Cap : Electrolytic Capacitor
FM Cap : Film Mica Capacitor
LL Cap : Low Leak Current Electrolytic Capacitor
MM Cap : Metalized Mylar Capacitor
MP Cap : Metalized Paper Capacitor
MY Cap : Mylar Capacitor
NP Cap : Non-polar Capacitor
PC Cap : Polycarbonate Capacitor
PP Cap : Polypropylene Capacitor
PS Cap : Polystyrol Capacitor
T Cap : Tantalum Capacitor
TF Cap : Thin Film Capacitor
TR Cap : Trimmer Capacitor

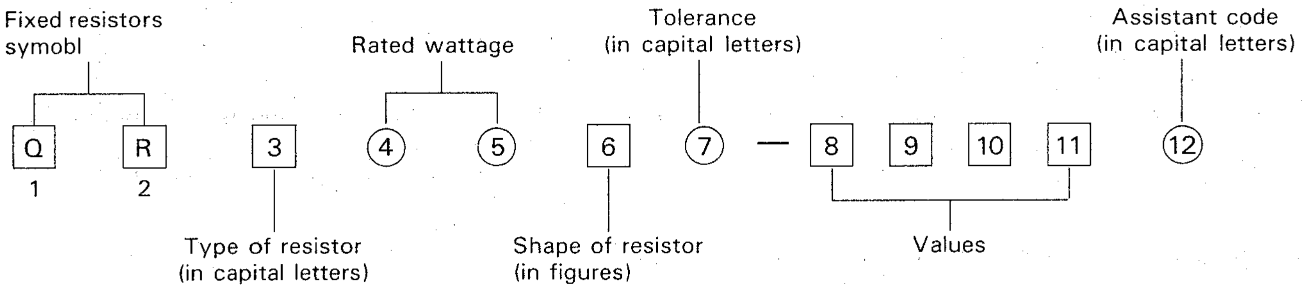
**NOTES:**

- [2 digits] indicate circuit board symbol number.
- "x2" indicates two pieces.
- Parts not denoted by parts numbers are not supplied by JVC.

## 8.1 STANDARD PART NUMBER CODING

### 8.1.1 Fixed resistor coding

**Fixed resistor part numbers are as follows.**


Fixed resistors symobl
Rated wattage
Tolerance (in capital letters)
Assistant code (in capital letters)
Q
R
3
④
⑤
6
⑦
—
8
9
10
11
⑫
1
2
Type of resistor (in capital letters)
Shape of resistor (in figures)
Values

**Type of resistor (third digit)**

| | |
|---|---|
| C | Composition resistors |
| D | Carbon film resistors |
| F | Unflammable resistors |
| G | Oxide metal film resistors |
| H | Fusible resistors |
| M | Metal plate resistors |
| S | Metal glazed resistors |
| V | Precision metal film resistors |
| W | Wire wound resistors |
| X | Metal film resistors |
| Z | Special resistors |

**Rated wattage (fourth and fifth digits)**

| | |
|---|---|
| A0 | 1/10 W |
| 18 | 1/8 W |
| 16 | 1/6 W |
| 14 | 1/4 W |
| 12 | 1/2 W |
| 01 | 1 W |
| 02 | 2 W |
| 03 | 3 W |
| 04 | 4 W |
| 05 | 5 W |
| 06 | 6 W |
| 07 | 7 W |
| 75 | 7.5 W |
| 08 | 8 W |
| 10 | 10 W |
| 15 | 15 W |
| A6 | 16 W |
| 20 | 20 W |
| 30 | 30 W |

**Tolerance (seventh digit)**

| | |
|---|---|
| F | ± 1 % |
| G | ± 2 % |
| J | ± 5 % |
| K | ± 10 % |
| M | ± 20 % |

**Assistant code (twelfth digit)**

| | |
|---|---|
| A | Small type |
| B | Small type |
| S | Small type |
| Y | Lead taping |
| Z | Lead taping |

**Values (eighth — tenth or eleventh digits)**

examples:

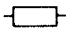
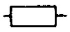
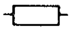
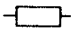
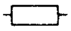
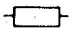
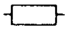
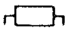
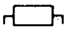
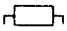
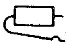
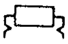
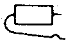
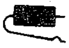
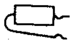
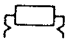
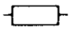
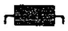
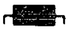
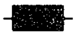
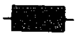
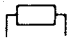
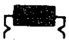
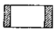
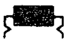
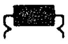
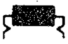
| | | |
|---|---|---|
| R47 | | 0.47 Ω |
| 4R7 | | 4.7 Ω |
| 470 | $47\times10^0$ | 47 Ω |
| 471 | $47\times10^1$ | 470 Ω |
| 472 | $47\times10^2$ | 4.7 kΩ |
| 473 | $47\times10^3$ | 47 kΩ |
| 474 | $47\times10^4$ | 470 kΩ |
| 475 | $47\times10^5$ | 4.7 MΩ |

QRV resistance shown by four digits:

| | | |
|---|---|---|
| 4640 | $464\times10^0$ | 464 Ω |
| 4641 | $464\times10^1$ | 4.64 kΩ |
| 4642 | $464\times10^2$ | 46.4 kΩ |

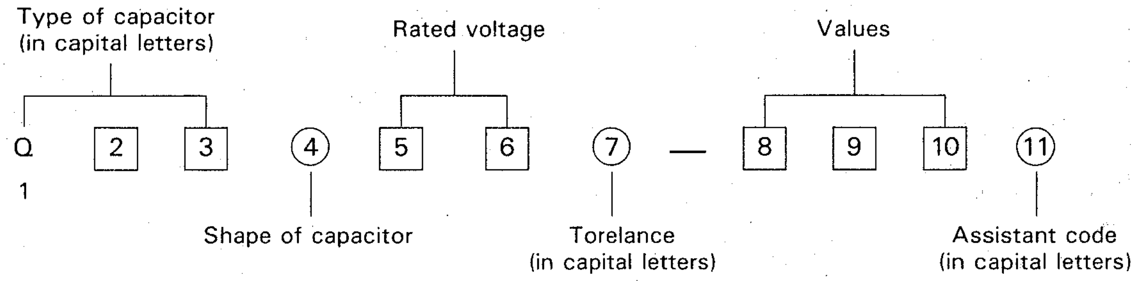
**Shape of resistor (sixth digit)**

**Note:** ■ marks are flame retardant resistor.

| Type of resistor / Shape of resistor | C | D | F | G | H | M | S | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  |  |  |  |  | | |  |  | |
| 2 |  |  | | | | | |  | | |
| 3 | |  | |  | | | |  | |  |
| 4 | |  | |  | | | |  | | |
| 5 | | | |  | | | | | (L) type |  |
| 6 | | | |  | | | | | |  |
| 7 | |  | Lug<br>(B) type | | | | | | |  |
| 8 | | | Lug<br>(A) type | | | |  Chip | | | |
| 9 | | | Lug<br>(C) type |  |  | | | | |  |

### 8.1.2 Fixed capacitor coding

**Fixed capacitor part numbers are as follows.**


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
4
5
6
7
—
8
9
10
11
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

**Ceramic capacitors**

| Type of capacitor (first — third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| Symbol | Characteristics | Mono-direction | Kink lead | Axial lead | Axial forming lead | Chip |
| QCC | Ceramic | 1 | | 4 | 5 | |
| QCD | High capacitance | | | | | A |
| QCF | High capacitance | 1,4 | 3 | | | 8,A |
| QCS | Temperature compensation | 1 | 3 | 4 | 5 | 8,A |
| QCT | Temperature compensation | Special coding | | | | 8,A |
| QCV | Ceramic | | | 1 | 3 | |
| QCX | Ceramic | | | 1 | 3 | |
| QCY | High capacitance | 1,4 | 3 | 6 | 7 | 8,A |
| QCZ | Special type | Special coding | | | | |

**Electrolytic capacitors**

| Type of capacitor (first-third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| Symbol | Characteristics | Tubular | Mono-direction | Anti-stress | Forming | Snap-in |
| QEB | Low leakage | | 4 | 5 | 6 | |
| QEC | Low leakage | | 4,8,A | 9,B | 6,C | |
| QEE | Tantalum (normal) | | 4 | 5 | 6 | |
| | Tantalum (small) | | 8 | | | |
| QEF | Chip tantalum | 8 (chip type) | | | | |
| QEG | Low impedance | | 4 | | | |
| QEK | Miniature type | | 4 | 5 | 6 | |
| QEL | Small type | | 4 | 5 | 6 | 7 |
| QEM | Small type | | 4 | 5 | 6 | |
| QEN | Non-polar | 2 | 4 | 5 | 6 | |
| QEP | Non-polar (small) | | 4,A | 5,B | 6,C | |
| QER | Miniature type | | 4 | 5 | 6 | |
| QET | Small type | 2 | 4 | 5,B | 6,C | 7 |
| QEU | Small type | | 4 | 5 | 6 | |
| QEV | Small type | | 4 | | 6 | 7 |
| QEW | Normal | 2 | 4 | 5 | 6 | 7 |

**Paper film capacitors**

| Type of capacitor (first — third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| | | Tubular | Normal | | Flame retardant | |
| Symbol | Characteristics | | Mono-direction | Kink lead | Mono-direction | Kink lead |
| QFA | Metalized polypropylene | | | | 7 | |
| QFE | Metalized mylar | | | | 5 | |
| QFF | Film mica | | 4 | | | |
| QFG | Polypropylene film | | 4 | 8 | | |
| QFH | Metalized mylar | 2 | 4 | 3 | 5,7 | 6 |
| QFJ | Mylar (special) | | 4 | | | |
| QFK | Metalized mylar (small) | | | | 5 | |
| QFM | Mylar | 2 | 4 | 3,7 | 5 | 6 |
| QFN | Mylar (small) | | 4 | 3 | | |
| QFP | Polypropylene | | 4 | 3,8 | | |
| QFS | Polystyrole | 2 | 4 | 3 | | |
| QFV | Thin film | | 4 | 8 | | |
| QFZ | Special type | Special coding | | | | |

**Rated voltage (fifth and sixth digits)**

| Sixth digit / Fifth digit | A | B | C | D | E | F | G | H | J | K | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | 3.15 | 4.0 | | 6.3 | | | | |
| 1 | 10 | | 16 | 20 | 25 | | 40 | 50 | 63 | 80 | 35 | | |
| 2 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | | 350 | 450 | 600 |
| 3 | 1000 | 1250 | | 2000 | | | | 5000 | | | | | |

**Tolerance (seventh digit)**

| | | | |
|---|---|---|---|
| A | $^{+100}_{-10}$ % | M | ±20 % |
| F | ±1 % | N | ±30 % |
| G | ±2 % | P | $^{+100}_{-0}$ % |
| H | $^{+50}_{-10}$ % | R | $^{+30}_{-10}$ % |
| J | ±5 % | X | $^{+40}_{-20}$ % |
| K | ±10 % | Z | $^{+80}_{-20}$ % |

**Values (eighth — tenth digits)**

Example : Values are in picofarads

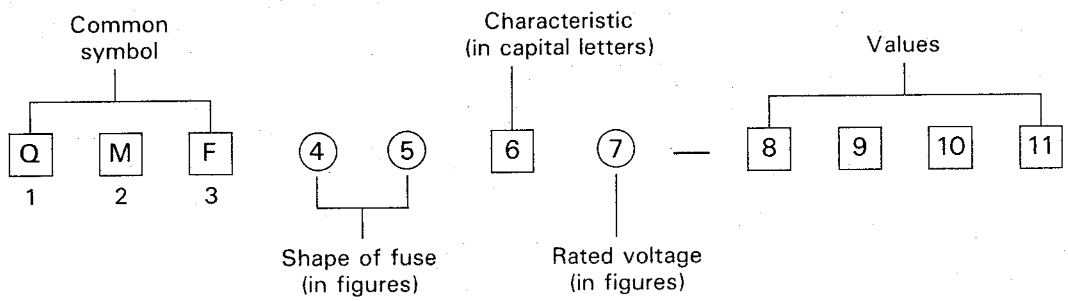
| | | |
|---|---|---|
| 101 | ............$10\times10^1$ pF............ | 100 pF |
| 102 | ............$10\times10^2$ pF............ | 1,000 pF (0.001 μF) |
| 103 | ............$10\times10^3$ pF............ | 10,000 pF (0.01 μF) |
| 104 | ............$10\times10^4$ pF............ | 100,000 pF (0.1 μF) |
| 105 | ............$10\times10^5$ pF............ | 1 μF |
| 5R0 | ............................................ | 5.0 pF |

**Assistant code (eleventh digit)**

| | |
|---|---|
| G | Small size |
| Z | Lead taping |

### 8.1.3 Fuse coding

**Standard fuse part numbers are as follows.**


Common symbol
Characteristic (in capital letters)
Values
Q
M
F
1
2
3
4
5
6
7
—
8
9
10
11
Shape of fuse (in figures)
Rated voltage (in figures)

**Shape of fuse**
**(fourth and fifth digits)**

| | |
|---|---|
| 51 | $\phi$5.2×20 mm |
| 60 | $\phi$6.4×30 mm |
| 61 | $\phi$6.35×31.8 mm |
| 63 | $\phi$6.4×30 mm with lead wires |
| 66 | $\phi$6.35×31.8 mm with lead wires |
| 00 | Special type |

**Rated voltage**
**(seventh digit)**

| | |
|---|---|
| 1 | AC125 V |
| 2 | AC250 V |
| 3 | 0.1−1 A : AC250 V<br>1.25−6.3 A : AC125 V |

**Values**
**(eighth-tenth or eleventh digits)**
example:
R63 ......... 0.63 A
1R0 ......... 1.0 A
2R5 ......... 2.5 A
100 ........ 10 A
R315 ......... 0.315 A
1R25 ......... 1.25 A

**Characteristics (sixth digit)**

| Symbol | Fusing Current | Fusing Time | Remarks |
|---|---|---|---|
| A | 210 % | Within 2 min. | Anti-rush type (for Europe) |
| | 275 % | 0.6 – 10 sec. | |
| | 400 % | 0.15 – 3 sec. | |
| | 1000 % | 0.02 – 0.3 sec. | |
| B | 210 % | Within 30 min. | Regular fusible type (for SEMKO, Europe) |
| | 275 % | 0.05 – 2 sec. | |
| | 400 % | 0.01 – 0.3 sec. | |
| C | 135 % | Within 1 hr. | Regular fusible type (for UL, Japan) |
| | 200 % | Within 2 min. | |
| E | 210 % | Within 2 min. | Anti-rush type (for Europe) |
| | 275 % | 0.6 – 10 sec. | |
| | 400 % | 0.15 – 3 sec. | |
| | 1000 % | 0.02 – 0.3 sec. | |
| J | 135 % | Within 1 hr. | Anti-rush type |
| | 200 % | Within 2 min. | |
| M | 135 % | Within 1 hr. | Regular fusible type (for UL) |
| | 200 % | Within 2 min. | |
| R | 160 % | Within 1 hr. | Regular fusible type |
| | 200 % | Within 2 min. | |
| S | 160 % | Within 1 hr. | Anti-rush type |
| | 200 % | Within 2 min. | |
| | 700 % – 2000 % | Within 0.01 sec. | |
| U | 135 % | Within 1 hr. | Anti-rush type (for UL) |
| | 200 % | Within 2 min. | |
| | 800 % – 2000 % | Within 0.01 sec. | |

## 8.2.1 Audio/Servo/Mechacon (A/S/M) Circuit Board Ass'y $\boxed{0}$ $\boxed{4}$. . . . . . . . . . . . . PU10864B-8

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| [Audio Section] | | | |
| IC 1 | 14VT06A | Integrated Circuit | |
| IC 2 | TA7361P | " | |
| IC 3 | 5VT01 | " | |
| IC 4 | AN6394 | " | |
| IC 5 | 14VT07 | " | |
| IC 6 | 11VT01 | " | |
| IC 7 | – | – | |
| IC 8 | TA7361P | Integrated Circuit | |
| IC 9 | AN6394 | " | |
| IC10 | 14VT07 | " | |
| IC11 | 11VT01 | " | |
| IC12 | – | – | |
| IC13 | TK15050 | Integrated Circuit | |
| ⚠ Q 1 | 2SD639R,S | Transistor | |
| Q 2 | 2SB644R,S | " | |
| ⚠ Q 3 | " | " | |
| ⚠ Q 4 | 2SD639S | " | |
| ⚠ Q 5 | 2SB644S | " | |
| Q 6 | 2SB641R,S | " | |
| Q 7 | 2SD636R,S | " | |
| Q 8 | DTC124EF | D. Transistor | |
| Q 9 | " | " | |
| Q10 | " | " | |
| Q11 | " | " | |
| Q12 | 2SB641R,S | Transistor | |
| Q13 | 2SD636R,S | " | |
| Q14 | DTC124EF | D. Transistor | |
| Q15 | " | " | |
| Q16 | " | " | |
| Q17 | " | " | |
| ⚠ Q18 | 2SD639R,S | Transistor | |
| Q19 | DTC124EF | D. Transistor | |
| Q20 | " | " | |
| Q21 | – | – | |
| Q22 | – | – | |
| Q23 | – | – | |
| Q24 | 2SD636Q,R,S | Transistor | |
| D 1 | 1SS133 | Diode | |
| D 2 | " | " | |
| D 3 | " | " | |
| D 4 | – | – | |
| D 5 | 1SS132 | Diode | |
| D 6 | " | " | |
| D 7 | RD6.2EB2 | Zener Diode | |
| D 8 | 1SS132 | Diode | |
| D 9 | RD8.2EB1 | Zener Diode | |
| D10 | 1SS133 | Diode | |
| D11 | " | " | |
| D12 | – | – | |
| D13 | 1SS133 | Diode | |
| D14 | " | " | |
| D15 | " | " | |
| D16 | 1SS133 | Diode | |
| D17 | " | " | |
| D18 | – | – | |
| D19 | – | – | |
| D20 | – | – | |
| D21 | – | – | |
| D22 | – | – | |
| D23 | – | – | |
| D24 | – | – | |
| D25 | 1SS133 | Diode | |
| D26 | " | " | |
| D27 | " | " | |
| D28 | " | " | |
| D29 | " | " | |
| D30 | " | " | |
| D31 | " | " | |
| D32 | " | " | |
| R 1 | QRD161J-182 | CR | |
| R 2 | " -222 | " | |
| R 3 | " -184 | " | |
| R 4 | " -560 | " | |
| R 5 | QRD181J-475 | " | |
| R 6 | QRD161J-472 | " | |
| R 7 | " -100 | " | |
| R 8 | – | – | |
| R 9 | – | – | |
| ⚠ R10 | QRZ0054-4R7 | FR | |
| R11 | – | – | |
| R12 | QRD161J-682 | CR | |
| R13 | " -123 | " | |
| R14 | " -123 | " | |
| R15 | " -392 | " | |
| R16 | – | – | |
| R17 | QVZ3518-683 | VR | CH-1 BIAS ADJ. |
| ⚠ R18 | QRD161J-273 | CR | |
| R19 | " -393 | " | |
| R20 | " -103 | " | |
| R21 | " -123 | " | |
| R22 | " -473 | " | |
| R23 | " -123 | " | |
| R24 | " -153 | " | |
| R25 | " -332 | " | |
| R26 | " -392 | " | |
| R27 | " -222 | " | |
| R28 | " -332 | " | |
| ⚠ R29 | QRZ0054-470 | FR | |
| R30 | QRD161J-560 | CR | |
| R31 | " -151 | " | |
| R32 | – | – | |
| R33 | QRD161J-183 | CR | |
| R34 | – | – | |
| R35 | QVZ3518-103 | VR | CH-1 PB LEVEL ADJ. |
| R36 | QRD161J-560 | CR | |
| R37 | " -682 | " | |
| R38 | " -124 | " | |
| R39 | " -392 | " | |
| R40 | " -124 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R41 | QRD161J-181 | CR | |
| R42 | " -221 | " | |
| R43 | " -123 | " | |
| R44 | " -223 | " | |
| R45 | " -154 | " | |
| R46 | " -153 | " | |
| R47 | " -103 | " | |
| R48 | " -103 | " | |
| R49 | " -123 | " | |
| R50 | QVZ3518-472 | VR | CH-1 REC LEVEL ADJ. |
| R51 | QRD161J-153 | CR | |
| R52 | " -471 | " | |
| R53 | " -822 | " | |
| ⚠ R54 | QRZ0054-470 | FR | |
| R55 | QRD161J-152 | CR | |
| R56 | " -273 | " | |
| R57 | — | — | |
| R58 | QRD161J-124 | CR | |
| R59 | " -124 | " | |
| R60 | QRD181J-221 | " | |
| R61 | — | — | |
| R62 | QVZ3518-683 | VR | CH-2 BIAS ADJ. |
| R63 | QRD161J-273 | CR | |
| ⚠ R64 | QRZ0054-470 | FR | |
| R65 | QRD161J-393 | CR | |
| R66 | " -183 | " | |
| R67 | " -560 | " | |
| R68 | " -151 | " | |
| R69 | — | — | |
| R70 | QVZ3518-103 | VR | CH-2 PB LEVEL ADJ. |
| R71 | QRD161J-123 | CR | |
| R72 | " -103 | " | |
| R73 | " -473 | " | |
| R74 | " -560 | " | |
| R75 | " -124 | " | |
| R76 | " -682 | " | |
| R77 | " -151 | " | |
| R78 | " -392 | " | |
| R79 | " -124 | " | |
| R80 | " -221 | " | |
| R81 | " -223 | " | |
| R82 | " -123 | " | |
| R83 | " -123 | " | |
| R84 | " -154 | " | |
| R85 | " -153 | " | |
| R86 | " -103 | " | |
| R87 | " -103 | " | |
| R88 | QVZ3518-472 | VR | CH-2 REC LEVEL ADJ. |
| R89 | QRD161J-153 | CR | |
| R90 | " -471 | " | |
| R91 | " -822 | " | |
| R92 | " -273 | " | |
| R93 | " -152 | " | |
| R94 | — | — | |
| R95 | QRD161J-331 | CR | |
| R96 | " -331 | " | |
| R97 | " -331 | " | |
| R98 | " -331 | " | |
| ⚠ R99 | QRZ0054-470 | FR | |
| R100 | QRD161J-222 | CR | |
| R101 | " -223 | " | |
| R102 | " -223 | " | |
| R103 | " -331 | " | |
| R104 | " -152 | " | |
| R105 | " -152 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R106 | QRD161J-331 | CR | |
| R107 | " -221 | " | |
| R108 | — | — | |
| R109 | — | — | |
| R110 | — | — | |
| R111 | QRD161J-221 | CR | |
| R112 | — | — | |
| R113 | — | — | |
| R114 | — | — | |
| R115 | — | — | |
| R116 | QRD161J-103 | CR | |
| R117 | " -103 | " | |
| R118 | " -223 | " | |
| R119 | " -222 | " | |
| R120 | " -222 | " | |
| R121 | " -472 | " | |
| R122 | " -472 | " | |
| R123 | " -223 | " | |
| R124 | " -472 | " | |
| R150 | PU56165-2 | VR | MIX VR |
| C 1 | QEK61CM-476 | E Cap | |
| C 2 | " -476 | " | |
| C 3 | QET41CM-107 | " | |
| C 4 | QEK61CM-106 | " | |
| C 5 | QFN31HJ-683 | MY Cap | |
| C 6 | QEN41EM-475 | NP Cap | |
| C 7 | QFN31HJ-154 | MY Cap | |
| C 8 | QEN41HM-225 | NP Cap | |
| C 9 | QFZ9011-224 | MP Cap | |
| C10 | QFP32AJ-273M | PP Cap | |
| C11 | QCS31HJ-561 | C Cap | |
| C12 | QFN31HJ-103 | MY Cap | |
| C13 | QET61CM-107 | E Cap | |
| C14 | QEK61HM-105 | " | |
| C15 | QET61CM-107 | " | |
| C16 | QEK61EM-475 | " | |
| C17 | QCS31HJ-391 | C Cap | |
| C18 | QEK61EM-335 | E Cap | |
| C19 | QEK61CM-106 | " | |
| C20 | " -226 | " | |
| C21 | " -476 | " | |
| C22 | QFN31HJ-124 | MY Cap | |
| C23 | " -333 | " | |
| C24 | QEK61EM-475 | E Cap | |
| C25 | QEK61HM-334 | " | |
| C26 | QFN31HJ-273 | MY Cap | |
| C27 | " -273 | " | |
| C28 | QEB61CM-226 | LL Cap | |
| C29 | QFN31HJ-102 | MY Cap | |
| C30 | " -102 | " | |
| C31 | QEL61EM-475 | LL Cap | |
| C32 | QFN31HJ-683 | MY Cap | |
| C33 | " -103 | " | |
| C34 | QEK61AM-476 | E Cap | |
| C35 | QEK60JM-107 | " | |

[Audio/S/M]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C36 | QEK61CM-106 | E Cap | |
| C37 | " -106 | " | |
| C38 | " -106 | " | |
| C39 | QEK61EM-335 | " | |
| C40 | QFN31HJ-182 | MY Cap | |
| C41 | " -152 | " | |
| C42 | QEK61CM-476 | E Cap | |
| C43 | — | — | |
| C44 | QEK61CM-476 | E Cap | |
| C45 | QEK61EM-475 | " | |
| C46 | " -475 | " | |
| C47 | QEN61EM-475 | NP Cap | |
| C48 | " -475 | " | |
| C49 | QEK61CM-476 | E Cap | |
| C50 | QEK61EM-475 | " | |
| C51 | QCS31HJ-391 | C Cap | |
| C52 | QEK61HM-335 | E Cap | |
| C53 | QEK61CM-106 | " | |
| C54 | " -226 | " | |
| C55 | " -476 | " | |
| C56 | QFN31HJ-124 | MY Cap | |
| C57 | " -333 | " | |
| C58 | QEK61EM-475 | E Cap | |
| C59 | QEK61HM-334 | " | |
| C60 | QFN31HJ-273 | MY Cap | |
| C61 | " -273 | " | |
| C62 | " -102 | " | |
| C63 | " -102 | " | |
| C64 | QEL61EM-475 | LL Cap | |
| C65 | QFN31HJ-683 | MY Cap | |
| C66 | QEB61CM-226 | LL Cap | |
| C67 | QFN31HJ-103 | MY Cap | |
| C68 | QEK61AM-476 | E Cap | |
| C69 | QEK60JM-107 | " | |
| C70 | QEK61CM-106 | " | |
| C71 | " -476 | " | |
| C72 | QEK61EM-335 | " | |
| C73 | QEK61CM-106 | " | |
| C74 | " -106 | " | |
| C75 | — | — | |
| C76 | QEK61CM-476 | E Cap | |
| C77 | QFN31HJ-152 | MY Cap | |
| C78 | " -182 | " | |
| C79 | " -333 | " | |
| C80 | " -332 | " | |
| C81 | " -332 | " | |
| C82 | " -332 | " | |
| C83 | QEK61HM-105 | E Cap | |
| C84 | " -105 | " | |
| C85 | QFN31HJ-332 | MY Cap | |
| C86 | " -103 | " | |
| C87 | QEK61CM-106 | E Cap | |
| C88 | " -106 | " | |
| C89 | — | — | |
| C90 | QFN31HJ-103 | MY Cap | |
| C91 | QCS31HJ-561 | C Cap | |
| C92 | — | — | |
| C93 | QEK61CM-106 | E Cap | |
| C94 | QCS31HJ-561 | C Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L 1 | PU54710-102 | Coil | |
| L 2 | PU49994-181 | " | |
| L 3 | " -560 | " | |
| L 4 | PU30284-28R | " | |
| L 5 | PU54710-472 | " | |
| L 6 | " -472 | " | |
| L 7 | " -472 | " | |
| L 8 | " -472 | " | |
| L 9 | PU53618-561F | Peaking Coil | |
| CN 1 | PU49215-2 | Cap. Housing | |
| CN 2 | " -2Y | " | |
| CN 3 | " -4 | " | |
| CN 4 | " -3 | " | |
| CN 5 | " -2R | " | |
| CN 6 | " -3 | " | |
| CN 7 | " -3R | " | |
| CN 8 | " -3Y | " | |
| CN 9 | " -3R | " | |
| CN10 | " -4 | " | |
| CN11 | — | — | |
| CN12 | — | — | |
| CN13 | — | — | |
| CN14 | — | — | |
| CN15 | — | — | |
| CN16 | PU49215-2 | Cap. Housing | |
| RY 1 | PU55259 | Relay | |
| RY 2 | " | " | |
| RY 3 | " | " | |
| ⚠ T 1 | PU56138 | Osc. Trans. | |
| T 2 | PU56139 | Trap Coil | |
| T 3 | " | " | |
| SW 1 | PU55852-1-2 | Slide Switch | NR |
| SW 2 | " -3-2 | " | DUB. |
| SW 3 | " -4-2 | " | MONITOR |
| SW 4 | PU55298 | " | PHONE LEV |
| SW 5 | PU55855 | Rotary Switch | REC SELECT |
| | QMS6302-124 | Headphone Jack | |
| | QMS6331-001 | Mic. Jack | |
| | PU34689-1-2 | Shield Case | |
| | PU34690 | " | |
| | PU56826 | Dust Cover | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| **[Servo Section]** | | | |
| IC401 | BA6305LN | Integrated Circuit | |
| IC402 | HA11780 | " | |
| ⚠IC403 | BA831S | " | |
| IC404 | BA236 | " | |
| IC405 | UPC393C | " | or LM393P |
| IC406 | M5218P | " | |
| IC407 | UPC393C | " | or LM393P |
| IC408 | UPD4030BC | " | or TP4030BN |
| IC409 | M50767-602P | " | |
| ⚠IC410 | UPD1511AC-046 | " | |
| IC411 | BA6302A | " | |
| IC412 | UPD4066BC | " | or TP4066BN |
| IC413 | " | " | or " |
| ⚠IC414 | UPD1511AC-028 | " | |
| IC415 | BA6328 | " | |
| IC416 | BA6302A | " | |
| IC417 | UPC358C | " | |
| ⚠IC418 | " | " | |
| IC419 | UPD4013BC | " | or TP4013BN |
| IC420 | " | " | or " |
| Q401 | DTC124EF | D. Transistor | |
| Q402 | DTA124EF | " | |
| Q403 | " | " | |
| Q404 | " | " | |
| Q405 | " | " | |
| Q406 | DTC124EF | " | |
| Q407 | DTC144EF | " | |
| Q408 | 2SB641P,Q,R | Transistor | |
| Q409 | 2SD636P,Q,R | " | |
| Q410 | DTA124EF | D. Transistor | |
| Q411 | 2SB641P,Q,R | Transistor | |
| Q412 | " | " | |
| Q413 | 2SD636P,Q,R | " | |
| Q414 | " | " | |
| Q415 | " | " | |
| Q416 | DTA124EF | D. Transistor | |
| Q417 | DTC124EF | " | |
| Q418 | 2SB643P,Q,R | Transistor | |
| Q419 | DTC124EF | D. Transistor | |
| Q420 | " | " | |
| Q421 | " | " | |
| Q422 | DTC144EF | " | |
| Q423 | DTA144EF | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| D401 | 1SS133 | Diode | |
| D402 | " | " | |
| D403 | " | " | |
| D404 | " | " | |
| D405 | " | " | |
| D406 | " | " | |
| D407 | " | " | |
| D408 | " | " | |
| D409 | " | " | |
| D410 | " | " | |
| D411 | " | " | |
| D412 | " | " | |
| D413 | " | " | |
| D414 | " | " | |
| D415 | — | — | |
| D416 | 1SS133 | Diode | |
| D417 | " | " | |
| D418 | " | " | |
| D419 | " | " | |
| D420 | " | " | |
| D421 | " | " | |
| D422 | " | " | |
| D423 | " | " | |
| D424 | " | " | |
| D425 | " | " | |
| D426 | " | " | |
| D427 | " | " | |
| D428 | " | " | |
| D429 | " | " | |
| D430 | " | " | |
| D431 | " | " | |
| D432 | " | " | |
| D433 | " | " | |
| D434 | " | " | |
| D435 | " | " | |
| D436 | " | " | |
| D437 | " | " | |
| D438 | " | " | |
| D439 | " | " | |
| D440 | " | " | |
| D441 | — | — | |
| D442 | 1SS133 | Diode | |
| D443 | " | " | |
| D444 | " | " | |
| D445 | " | " | |
| D446 | — | — | |
| D447 | 1SS133 | Diode | |
| D448 | " | " | |
| D449 | " | " | |
| D450 | " | " | |
| D451 | " | " | |
| DA401 | — | — | |
| DA402 | MC921-28 | Diode Array | or MC921 |

[A/Servo/M]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R401 | QRD161J-102 | CR | |
| R402 | ″ -102 | ″ | |
| R403 | ″ -561 | ″ | |
| R404 | ″ -223 | ″ | |
| R405 | ″ -105 | ″ | |
| R406 | ″ -472 | ″ | |
| R407 | ″ -471 | ″ | |
| R408 | ″ -473 | ″ | |
| R409 | — | — | |
| R410 | QRD161J-103 | CR | |
| R411 | QVZ1802-224 | VR | V. LOCK |
| R412 | QRD161J-224 | CR | |
| R413 | ″ -224 | ″ | |
| R414 | QVZ3518-473 | VR | Drum PU Pulse |
| R415 | QVZ3518-474 | ″ | CH-1 SW |
| R416 | QRD161J-224 | CR | |
| R417 | QVZ3518-474 | VR | CH-2 SW |
| R418 | QRD161J-224 | CR | |
| R419 | ″ -184 | ″ | |
| R420 | ″ -563 | ″ | |
| R421 | ″ -103 | ″ | |
| R422 | ″ -102 | ″ | |
| R423 | ″ -103 | ″ | |
| R424 | ″ -103 | ″ | |
| R425 | ″ -103 | ″ | |
| R426 | ″ -333 | ″ | |
| R427 | ″ -333 | ″ | |
| R428 | ″ -104 | ″ | |
| R429 | ″ -104 | ″ | |
| R430 | QVZ3518-104 | VR | REC SW |
| R431 | QRD161J-105 | CR | |
| R432 | ″ -104 | ″ | |
| R433 | ″ -334 | ″ | |
| R434 | ″ -223 | ″ | |
| R435 | QVZ3520-223 | VR | Tracking Preset |
| R436 | QRD161J-273 | CR | |
| R437 | PU56164-3 | VR | Tracking |
| R438 | QRD161J-102 | CR | |
| R439 | — | — | |
| R440 | QRD161J-224 | CR | |
| R441 | ″ -104 | ″ | |
| R442 | ″ -334 | ″ | |
| R443 | ″ -394 | ″ | |
| R444 | ″ -153 | ″ | |
| R445 | ″ -394 | ″ | |
| R446 | QVZ3518-333 | VR | EP REV x 1 Preset |
| R447 | ″ -333 | ″ | EP FWD x 3 Preset |
| R448 | ″ -333 | CR | |
| R449 | QVZ3244-224 | VR | SP Slow Preset |
| R450 | ″ -224 | ″ | LP/EP Slow Preset |
| R451 | PU56164-2 | ″ | Slow Tracking |
| R452 | QRD161J-333 | CR | |
| R453 | ″ -473 | ″ | |
| R454 | ″ -334 | ″ | |
| R455 | ″ -105 | ″ | |
| R456 | ″ -472 | ″ | |
| R457 | ″ -274 | ″ | |
| R458 | ″ -105 | ″ | |
| R459 | ″ -103 | ″ | |
| R460 | ″ -105 | ″ | |
| R461 | ″ -274 | ″ | |
| R462 | ″ -103 | ″ | |
| R463 | ″ -105 | ″ | |
| R464 | ″ -822 | ″ | |
| R465 | ″ -224 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R466 | QRD161J-103 | CR | |
| R467 | ″ -221 | ″ | |
| R468 | ″ -103 | ″ | |
| R469 | ″ -153 | ″ | |
| R470 | ″ -474 | ″ | |
| R471 | ″ -103 | ″ | |
| R472 | ″ -103 | ″ | |
| R473 | ″ -105 | ″ | |
| R474 | ″ -222 | ″ | |
| R475 | ″ -333 | ″ | |
| R476 | ″ -683 | ″ | |
| R477 | ″ -103 | ″ | |
| R478 | ″ -333 | ″ | |
| R479 | — | — | |
| R480 | QRD161J-473 | CR | |
| R481 | ″ -333 | ″ | |
| R482 | ″ -473 | ″ | |
| R483 | ″ -823 | ″ | |
| R484 | ″ -103 | ″ | |
| R485 | — | — | |
| R486 | QRD161J-104 | CR | |
| R487 | ″ -105 | ″ | |
| R488 | ″ -103 | ″ | |
| R489 | ″ -473 | ″ | |
| R490 | ″ -473 | ″ | |
| R491 | ″ -104 | ″ | |
| R492 | QVZ3518-104 | VR | LP Cap. Discr. |
| R493 | ″ -473 | ″ | SP/EP Cap. Discr. |
| R494 | QRD161J-223 | CR | |
| R495 | ″ -473 | ″ | |
| R496 | ″ -333 | ″ | |
| R497 | ″ -333 | ″ | |
| R498 | ″ -824 | ″ | |
| R499 | ″ -474 | ″ | |
| R500 | ″ -333 | ″ | |
| R501 | ″ -102 | ″ | |
| R502 | ″ -562 | ″ | |
| R503 | ″ -182 | ″ | |
| R504 | ″ -103 | ″ | |
| R505 | ″ -824 | ″ | |
| R506 | ″ -105 | ″ | |
| R507 | ″ -104 | ″ | |
| R508 | ″ -473 | ″ | |
| R509 | ″ -823 | ″ | |
| R510 | ″ -124 | ″ | |
| R511 | ″ -563 | ″ | |
| R512 | ″ -563 | ″ | |
| R513 | ″ -104 | ″ | |
| R514 | ″ -563 | ″ | |
| R515 | ″ -184 | ″ | |
| R516 | ″ -104 | ″ | |
| R517 | ″ -473 | ″ | |
| R518 | ″ -563 | ″ | |
| R519 | — | — | |
| R520 | QRD161J-103 | CR | |
| R521 | ″ -103 | ″ | |
| R522 | ″ -103 | ″ | |
| R523 | ″ -223 | ″ | |
| R524 | ″ -333 | ″ | |
| R525 | ″ -562 | ″ | |
| R526 | ″ -562 | ″ | |
| R527 | ″ -104 | ″ | |
| R528 | ″ -105 | ″ | |
| R529 | ″ -103 | ″ | |
| R530 | ″ -104 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R531 | QVZ3520-223 | VR | H. Sync. Discr. |
| R532 | QRD161J-103 | CR | |
| R533 | " -473 | " | |
| R534 | " -333 | " | |
| R535 | QVZ3520-683 | VR | Drum Discr. |
| R536 | QRD161J-154 | CR | |
| R537 | " -563 | " | |
| R538 | " -682 | " | |
| R539 | " -333 | " | |
| R540 | " -473 | " | |
| R541 | " -472 | " | |
| R542 | " -564 | " | |
| R543 | " -472 | " | |
| R544 | " -223 | " | |
| R545 | " -473 | " | |
| R546 | " -473 | " | |
| R547 | " -104 | " | |
| R548 | " -105 | " | |
| R549 | " -103 | " | |
| R550 | " -105 | " | |
| R551 | " -223 | " | |
| R552 | " -684 | " | |
| R553 | " -683 | " | |
| R554 | " -563 | " | |
| R555 | " -103 | " | |
| R556 | — | — | |
| R557 | QRD161J-103 | CR | |
| R558 | " -153 | " | |
| R559 | " -562 | " | |
| R560 | " -683 | " | |
| R561 | PU56164 | VR | Picture Sharpness |
| R562 | QRD161J-102 | CR | |
| R563 | " -333 | " | |
| R564 | — | — | |
| R565 | — | — | |
| R566 | QRD161J-333 | CR | |
| R567 | " -333 | " | |
| R568 | " -333 | " | |
| R569 | " -333 | " | |
| R570 | " -472 | " | |
| R571 | " -473 | " | |
| R572 | " -473 | " | |
| R573 | " -393 | " | |
| R574 | " -393 | " | |
| R575 | " -822 | " | |
| R576 | " -473 | " | |
| R577 | " -333 | " | |
| R578 | " -224 | " | |
| R579 | QRD187J-223 | " | |
| R580 | QRD161J-273 | " | |
| R581 | " -472 | " | |
| R582 | " -472 | " | |
| R583 | " -472 | " | |
| R584 | " -472 | " | |
| R585 | " -103 | " | |
| R586 | " -104 | " | |
| R587 | — | — | |
| R588 | — | — | |
| R589 | — | — | |
| R590 | QRD161J-472 | CR | |
| R591 | " -223 | " | |
| R592 | " -104 | " | |
| R593 | " -104 | " | |
| R594 | " -103 | " | |
| R595 | " -473 | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R596 | QRD161J-472 | CR | |
| R597 | " -102 | " | |
| R598 | " -472 | " | |
| R599 | " -472 | " | |
| R600 | " -822 | " | |
| R601 | — | — | |
| R602 | QRD161J-222 | CR | |
| R603 | " -222 | " | |
| R604 | " -823 | " | |
| R605 | " -222 | " | |
| R606 | " -104 | " | |
| R607 | " -103 | " | |
| C401 | QET41CM-476 | E Cap | |
| C402 | QET61CM-226 | " | |
| C403 | QFN31HK-102 | MY Cap | |
| C404 | QET61CM-476 | E Cap | |
| C405 | QCS31HJ-221 | C Cap | |
| C406 | QFN31HJ-333 | MY Cap | |
| C407 | QET61HM-105 | E Cap | |
| C408 | QET61CM-476 | " | |
| C409 | QFN31HJ-682 | MY Cap | |
| C410 | " -102 | " | |
| C411 | " -222 | " | |
| C412 | " -222 | " | |
| C413 | QET61HM-105 | E Cap | |
| C414 | QFN31HK-102 | MY Cap | |
| C415 | " -682 | " | |
| C416 | " -682 | " | |
| C417 | " -102 | " | |
| C418 | QET41CM-476 | E Cap | |
| C419 | " -476 | " | |
| C420 | QEB41CM-106 | LL Cap | |
| C421 | " -106 | " | |
| C422 | " -106 | " | |
| C423 | " -106 | " | |
| C424 | QFN31HK-273 | MY Cap | |
| C425 | " -333 | " | |
| C426 | QCS31HJ-331 | C Cap | |
| C427 | QFN31HK-223 | MY Cap | |
| C428 | QCS31HJ-471 | C Cap | |
| C429 | QFN31HK-102 | MY Cap | |
| C430 | QFN41HJ-104 | " | |
| C431 | QET61CM-476 | E Cap | |
| C432 | QFN31HK-823 | MY Cap | |
| C433 | QFN31HJ-104 | " | |
| C434 | QFN31HK-273 | " | |
| C435 | " -473 | " | |
| C436 | " -102 | " | |
| C437 | QCS31HJ-331 | C Cap | |
| C438 | QEN41HM-105 | NP Cap | |
| C439 | QFN31HK-104 | MY Cap | |
| C440 | " -104 | " | |
| C441 | " -104 | " | |
| C442 | QET61CM-476 | E Cap | |
| C443 | QFN31HK-104 | MY Cap | |
| C444 | QET61HM-105 | E Cap | |
| C445 | QFN31HK-222 | MY Cap | |

**[A/Servo/M]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C446 | QFN31HK-103 | MY Cap | |
| C447 | " -102 | " | |
| C448 | " -103 | " | |
| C449 | QET61CM-106 | E Cap | |
| C450 | QEN41HM-105 | NP Cap | |
| C451 | QCS31HJ-681 | C Cap | |
| C452 | QET61HM-105 | E Cap | |
| C453 | QET41AM-107 | " | |
| C454 | QET61CM-106 | " | |
| C455 | QCS31HJ-330 | C Cap | |
| C456 | QET41CM-106 | E Cap | |
| C457 | QFN31HK-122 | MY Cap | |
| C458 | QET41CM-106 | E Cap | |
| C459 | QCF31EZ-103 | C Cap | |
| C460 | " -103 | " | |
| C461 | QET61CM-106 | E Cap | |
| C462 | QCS31HJ-680 | C Cap | |
| C463 | " -680 | " | |
| C464 | QET41HM-474 | E Cap | |
| C465 | QET61CM-226 | " | |
| C466 | QFN31HK-152 | MY Cap | |
| C467 | QET61CM-476 | E Cap | |
| C468 | QFN31HK-103 | MY Cap | |
| C469 | QFM71HK-333 | " | |
| C470 | QEN61HM-474 | NP Cap | |
| C471 | QFN31HK-154 | MY Cap | |
| C472 | QEN61HM-474 | NP Cap | |
| C473 | QFN41HK-184 | MY Cap | |
| C474 | QCF31EZ-103 | C Cap | |
| C475 | QET61CM-106 | E Cap | |
| C476 | QCS31HJ-680 | C Cap | |
| C477 | " -680 | " | |
| C478 | – | – | |
| C479 | QFN31HK-223 | MY Cap | |
| C480 | " -223 | " | |
| C481 | QET61HM-474 | E Cap | |
| C482 | QET61CM-226 | " | |
| C483 | QFN31HK-152 | MY Cap | |
| C484 | QET61HM-105 | E Cap | |
| C485 | QFN31HK-103 | MY Cap | |
| C486 | QFP42AJ-152 | PP Cap | |
| C487 | " -102 | " | |
| C488 | " -392 | " | |
| C489 | – | – | |
| C490 | QFN31HK-102 | MY Cap | |
| C491 | " -103 | " | |
| C492 | QCS31HJ-470 | C Cap | |
| C493 | QFN31HK-273 | MY Cap | |
| C494 | QET41CM-226 | E Cap | |
| C495 | QFN31HK-683 | MY Cap | |
| C496 | QEN41CM-106 | NP Cap | |
| C497 | QEN41HM-474 | " | |
| C498 | " -105 | " | |
| C499 | – | – | |
| C500 | – | – | |
| C501 | QET61CM-476 | E Cap | |
| C502 | QFN31HK-222 | MY Cap | |
| C503 | QEK61CM-106 | E Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| L401 | PU53618-101JD | Peaking Coil | |
| L402 | " -101JD | " | |
| L403 | " -101JD | " | |
| ⚠ X401 | PU47701 | Crystal | |
| ⚠CF401 | PU55812 | C. Resonator | |
| ⚠CF402 | " | " | |
| CN401 | PU49215-2 | Cap. Housing | |
| CN402 | " -2 | " | |
| CN403 | " -2 | " | |
| CN404 | " -6 | " | |
| CN405 | " -2 | " | |
| CN406 | " -8 | " | |
| CN407 | " -4 | " | |
| CN408 | – | – | |
| CN409 | PU49215-7 | Cap. Housing | |
| RA401 | RGLD6X474M | Resistor Array | |
| ⚠ | PQ10037-2-5 | Jack Board | |
| | SDSF3008Z | Tap. Screw | x 2 |
| | PU55778-1-3 | Hinge | x 2 |
| | PQ40404 | Dust Spacer | x 3 |
| | PQ40404-2-3 | " | |
| | PQ40404-3 | " | |
| | PU57215 | Spacer | x 6 |

**Note:** "x 2", "x 3" & "x 6" indicate two, Three and six pieces respectively.

## [A/S/Mechacon]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| [Mechacon Section] | | | |
| ⚠IC201 | LM339N | Integrated Circuit | or UPC339C |
| ⚠IC202 | M50740-609SP | " | |
| IC203 | M54519P | " | or UPA81C |
| IC204 | M50790SP | " | |
| ⚠IC205 | BA6209U | " | |
| ⚠IC206 | " | " | |
| IC207 | UPC1373H | " | or UPC1373HA |
| Q201 | — | — | |
| Q202 | 2SD636R,S | Transistor | |
| Q203 | DTC124EF | D. Transistor | |
| Q204 | 2SB641R,S | Transistor | |
| ⚠Q205 | 2SD637R,S | " | |
| Q206 | — | — | |
| Q207 | 2SD636R,S | Transistor | |
| Q208 | 2SD1055Q,R,S | " | |
| Q209 | DTC124EF | D. Transistor | |
| Q210 | " | " | |
| Q211 | DTA124EF | " | |
| Q212 | 2SD636R,S | Transistor | |
| Q213 | " | " | |
| Q214 | DTA124EF | D. Transistor | |
| Q215 | — | — | |
| Q216 | — | — | |
| Q217 | DTC124EF | D. Transistor | |
| Q221 | 2SC458C,D | Transistor | |
| D201 | RD7.5EB2 | Zener Diode | |
| D202 | 1SS133 | Diode | |
| D203 | RD3.0EB2 | Zener Diode | |
| D204 | RD7.5EB1 | " | |
| D205 | 1SS133 | Diode | |
| D206 | " | " | |
| D207 | " | " | |
| D208 | — | — | |
| D209 | 1SS133 | Diode | |
| D210 | RD8.2EB2 | Zener Diode | |
| D211 | 1SS133 | Diode | |
| D212 | " | " | |
| D213 | — | — | |
| D214 | RD10EB2 | Zener Diode | |
| ⚠D215 | RD13EB1 | " | or TZ12A |
| ⚠D216 | RD12EB2 | " | |
| D217 | 1SS133 | Diode | |
| D218 | " | " | |
| D219 | " | " | |
| D220 | " | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| D221 | 1SS133 | Diode | |
| D222 | PD48PI2 | Photo Transistor | |
| ⚠D223 | RD15EB1 | Zener Diode | |
| D224 | — | — | |
| D225 | — | — | |
| D226 | — | — | |
| D227 | 1SS133 | Diode | |
| ⚠D228 | 10E2 | " | |
| D229 | — | — | |
| D230 | — | — | |
| D231 | 1SS133 | Diode | |
| D232 | — | — | |
| D233 | — | — | |
| D234 | — | — | |
| D235 | — | — | |
| D236 | — | — | |
| D237 | 1SS133 | Diode | |
| D238 | RD13EB1 | Zener Diode | |
| D239 | MA27WA | Diode | |
| D240 | — | — | |
| D241 | — | — | |
| D242 | — | — | |
| D243 | — | — | |
| D244 | 1SS133 | Diode | |
| D245 | " | " | |
| D246 | — | — | |
| D247 | — | — | |
| D248 | RD15EB | Zener Diode | |
| R201 | QRD161J-102 | CR | |
| R202 | — | — | |
| R203 | QRD161J-102 | CR | |
| R204 | " -103 | " | |
| R205 | " -274 | " | |
| R206 | " -274 | " | |
| R207 | " -104 | " | |
| R208 | " -184 | " | |
| R209 | " -274 | " | |
| R210 | " -103 | " | |
| R211 | " -473 | " | |
| R212 | " -683 | " | |
| R213 | — | — | |
| R214 | QRD161J-104 | CR | |
| R215 | " -472 | " | |
| R216 | " -472 | " | |
| R217 | " -472 | " | |
| R218 | " -473 | " | |
| R219 | " -473 | " | |
| R220 | — | — | |
| R221 | — | — | |
| R222 | QRD161J-472 | CR | |
| R223 | " -472 | " | |
| R224 | " -472 | " | |
| R225 | " -472 | " | |

## [A/S/Mechacon]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R226 | QRD161J-103 | CR | |
| R227 | ″ -472 | ″ | |
| R228 | ″ -105 | ″ | |
| R229 | ″ -183 | ″ | |
| R230 | – | – | |
| R231 | QRD161J-103 | CR | |
| R232 | ″ -473 | ″ | |
| R233 | ″ -103 | ″ | |
| R234 | ″ -103 | ″ | |
| R235 | ″ -472 | ″ | |
| R236 | ″ -103 | ″ | |
| R237 | ″ -472 | ″ | |
| R238 | ″ -472 | ″ | |
| R239 | ″ -101 | ″ | |
| R240 | ″ -682 | ″ | |
| R241 | ″ -472 | ″ | |
| R242 | ″ -472 | ″ | |
| R243 | – | – | |
| R244 | – | – | |
| R245 | QRD161J-472 | CR | |
| R246 | ″ -472 | ″ | |
| R247 | ″ -472 | ″ | |
| R248 | ″ -101 | ″ | |
| R249 | – | – | |
| R250 | – | – | |
| R251 | – | – | |
| R252 | – | – | |
| R253 | – | – | |
| R254 | QRD161J-103 | CR | |
| R255 | ″ -223 | ″ | |
| R256 | – | – | |
| R257 | – | – | |
| R258 | – | – | |
| R259 | – | – | |
| R260 | QRD161J-682 | CR | |
| R261 | ″ -183 | ″ | |
| R262 | ″ -273 | ″ | |
| R263 | ″ -103 | ″ | |
| R264 | ″ -104 | ″ | |
| R265 | ″ -104 | ″ | |
| R266 | ″ -104 | ″ | |
| R267 | ″ -104 | ″ | |
| R268 | QRD162J-104 | ″ | |
| R269 | QRD161J-472 | ″ | |
| R270 | ″ -103 | ″ | |
| R271 | ″ -223 | ″ | |
| R272 | ″ -222 | ″ | |
| R273 | – | – | |
| R274 | QRD161J-124 | CR | |
| R275 | ″ -124 | ″ | |
| R276 | – | – | |
| R277 | – | – | |
| R278 | – | – | |
| R279 | – | – | |
| R280 | QRD161J-104 | CR | |
| R281 | – | – | |
| R282 | – | – | |
| R283 | – | – | |
| R284 | – | – | |
| R285 | QRD162J-154 | CR | |
| R286 | QRD161J-5R6 | ″ | |
| R287 | ″ -102 | ″ | |
| R288 | ″ -103 | ″ | |
| R289 | ″ -104 | ″ | |
| R290 | ″ -102 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R291 | QRD161J-473 | CR | |
| R292 | ″ -104 | ″ | |
| R293 | ″ -224 | ″ | |
| R294 | ″ -473 | ″ | |
| R295 | ″ -274 | ″ | |
| R296 | ″ -473 | ″ | |
| R297 | – | – | |
| R298 | QRD161J-153 | CR | |
| R299 | ″ -103 | ″ | |
| R300 | ″ -682 | ″ | |
| R301 | ″ -123 | ″ | |
| R302 | ″ -103 | ″ | |
| R303 | QRD182J-223 | ″ | |
| R304 | QRD161J-103 | ″ | |
| R305 | – | – | |
| R306 | – | – | |
| R307 | – | – | |
| R308 | – | – | |
| R309 | – | – | |
| R310 | – | – | |
| R311 | – | – | |
| R312 | – | – | |
| R313 | – | – | |
| R314 | QRD161J-104 | CR | |
| R315 | ″ -821 | ″ | |
| R316 | ″ -561 | ″ | |
| R317 | ″ -561 | ″ | |
| R318 | ″ -561 | ″ | |
| R319 | ″ -561 | ″ | |
| R320 | ″ -561 | ″ | |
| R321 | ″ -102 | ″ | |
| R336 | QRD161J-103 | CR | |
| ⚠ R337 | PU52108-4R7 | Posistor | or PU52108-4R7T |
| C201 | – | – | |
| C202 | QEK61HM-105 | E Cap | |
| C203 | QCS31HJ-390 | C Cap | |
| C204 | ″ -390 | ″ | |
| C205 | QEE51CM-475 | T Cap | |
| C206 | QFN31HJ-224 | MY Cap | |
| C207 | QET41EM-475 | E Cap | |
| C208 | QFN31HK-103 | MY Cap | |
| C209 | ″ -103 | ″ | |
| C210 | – | – | |
| C211 | QFN31HK-103 | MY Cap | |
| C212 | QFN31HJ-683 | ″ | |
| C213 | QEK61AM-476 | E Cap | |
| C214 | QEK61CM-476 | ″ | |
| C215 | QET61HM-225 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C216 | QEK61CM-336 | E Cap | |
| C217 | QEE41EM-225 | T Cap | |
| C218 | QCF31HP-223 | C Cap | |
| C219 | " -223 | " | |
| C220 | – | – | |
| C221 | – | – | |
| C222 | QFN31HK-103 | MY Cap | |
| C223 | – | – | |
| C224 | QFZ9011-184 | MP Cap | |
| C225 | QFN31HK-223 | MY Cap | |
| C226 | QEK61CM-476 | E Cap | |
| C227 | QEE51EM-475 | T Cap | |
| C228 | – | – | |
| C229 | – | – | |
| C230 | QFN41HJ-223 | MY Cap | |
| C231 | – | – | |
| C232 | – | – | |
| C233 | QCF11HP-473 | C Cap | |
| C234 | QFN41HJ-823 | MY Cap | |
| C235 | " -823 | " | |
| C236 | QFN31HJ-333 | " | |
| ⚠CF201 | PU56292 | Ceramic Filter | |
| L201 | PU52612 | Resonator | |
| L202 | – | – | |
| L203 | PU53618-101D | Peaking Coil | |
| L204 | PU53223-101G | " | |
| L205 | PU53618-101D | Coil | |
| L206 | – | – | |
| L207 | PU53223-1R0KG | Peaking Coil | |
| CN201 | PU49215-4R | Cap. Housing | |
| CN202 | " -4Y | " | |
| CN203 | " -8 | " | |
| CN204 | " -4 | " | |
| CN205 | – | – | |
| CN206 | – | – | |
| CN207 | – | – | |
| CN208 | PU49215-109 | Cap. Housing | |
| CN209 | " -4 | " | |
| CN210 | " -3Y | " | |
| CN211 | " -4 | " | |
| CN212 | " -9 | " | |
| CN213 | – | – | |
| CN214 | PU49215-107 | Cap. Housing | |
| RA201 | RGLD5X474M | Resistor Array | or EXB-P85474M |
| RA202 | RGLD4X472M | " | or EXB-P84472M |
| RA203 | RGLD5X103M | " | or EXB-P85103M |
| RA204 | RGLD4X103M | " | or EXB-P84103M |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| SW201 | PU55852-1-2 | Slide Switch | REMAIN |
| SW202 | " -2-2 | " | MEMORY |
| | PU56225-1-4 | Shield Cover (1) | IFR |
| | PU56226-1-5 | " (2) | " |
| | PU56772-1-2 | " (3) | " |
| | PU57245 | Insulator | |

## 6.2.5 FM Audio (FMA) Circuit Board Ass'y $\boxed{0}\,\boxed{5}$
. . . . . . . . . . . . . . . . . . . . . . . . . PU11034G-1

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| IC 1 | HA11752 | Integrated Circuit | |
| IC 2 | AN6392 | " | |
| IC 3 | TK15021 | " | |
| IC 4 | " | " | |
| IC 5 | TK10322 | " | |
| IC 6 | TK15021 | " | |
| IC 7 | M5218P | " | |
| IC 8 | " | " | |
| IC 9 | TA7324P | " | |
| IC10 | M5218P | " | |
| IC11 | TA7324P | " | |
| IC12 | M5218P | " | |
| ⚠ IC13 | AN6391S | Flat I.C. | |
| ⚠ IC14 | " | " | |
| IC15 | EHM-X42U50B | Integrated Circuit | |
| IC16 | " | " | |
| IC17 | BA226F | Flat I.C. | |
| IC18 | BA634F | " | |
| IC19 | M5218P | Integrated Circuit | |
| IC20 | 7VT06 | " | |
| IC21 | " | " | |
| Q 1 | 2SC3053 | Chip Transistor | |
| Q 2 | " | " | |
| Q 3 | " | " | |
| Q 4 | " | " | |
| Q 5 | DTC124EF | D. Transistor | |
| Q 6 | " | " | |
| Q 7 | " | " | |
| Q 8 | " | " | |
| Q 9 | 2SC2021R,S | Transistor | |
| ⚠ Q10 | TA78L005AP | Reg. Transistor | |
| Q11 | DTC124EF | D. Transistor | |
| Q12 | 2SD545E,F | Transistor | |
| Q13 | 2SC3053 | Chip Transistor | |
| Q14 | DTC124EF | D. Transistor | |
| Q15 | 2SD545E,F | Transistor | |
| Q16 | " | " | |
| D 1 | — | — | |
| D 2 | — | — | |
| D 3 | — | — | |
| D 4 | — | — | |
| D 5 | MC2838 | Chip Diode | |
| D 6 | MC2836 | " | |
| D 7 | — | — | |
| D 8 | — | — | |
| D 9 | MC2836 | Chip Diode | |
| D10 | MC2838 | " | |
| D11 | MC2836 | " | |
| D12 | — | — | |
| D13 | — | — | |
| D14 | MC2838 | Chip Diode | |
| D15 | OA90 | Diode | |
| D16 | MC2838 | Chip Diode | |
| D17 | MC2836 | " | |
| D18 | " | " | |
| D19 | 1SS133 | Diode | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R 1 | QRS188J-272YN | Chip R | |
| R 2 | " -100YN | " | |
| R 3 | " -272YN | " | |
| R 4 | " -272YN | " | |
| R 5 | " -100YN | " | |
| R 6 | " -471YN | " | |
| R 7 | " -471YN | " | |
| R 8 | " -561YN | " | |
| R 9 | " -103YN | " | |
| R10 | " -123YN | " | |
| R11 | " -123YN | " | |
| R12 | " -103YN | " | |
| R13 | " -561YN | " | |
| R14 | " -102YN | " | |
| R15 | — | — | |
| R16 | QRS188J-224YN | Chip R | |
| R17 | " -223YN | " | |
| R18 | " -471YN | " | |
| R19 | " -561YN | " | |
| R20 | " -121YN | " | |
| R21 | " -102YN | " | |
| R22 | " -393YN | " | |
| R23 | " -102YN | " | |
| R24 | QVZ3531-472 | VR | CH-1 E-E |
| R25 | " -472 | " | CH-2 E-E |
| R26 | QRS188J-823YN | Chip R | |
| R27 | " -124YN | " | |
| R28 | " -823YN | " | |
| R29 | " -124YN | " | |
| R30 | QVZ3531-472 | VR | CH-1 FMA E-E |
| R31 | " -472 | " | CH-2 FMA E-E |
| R32 | QRS188J-123YN | Chip R | |
| R33 | " -123YN | " | |
| R34 | " -473YN | " | |
| R35 | — | — | |
| R36 | QRS188J-183YN | Chip R | |
| R37 | " -473YN | " | |
| R38 | — | — | |
| R39 | QRS188J-183YN | Chip R | |
| R40 | " -123YN | " | |
| R41 | " -124YN | " | |
| R42 | " -123YN | " | |
| R43 | " -124YN | " | |
| R44 | " -222YN | " | |
| R45 | " -222YN | " | |
| R46 | QRD161J-101 | CR | |
| R47 | QRS188J-473YN | Chip R | |
| R48 | " -473YN | " | |
| R49 | " -473YN | " | |
| R50 | " -473YN | " | |
| R51 | " -124YN | " | |
| R52 | " -124YN | " | |
| R53 | " -222YN | " | |
| R54 | " -472YN | " | |
| R55 | " -472YN | " | |
| R56 | " -222YN | " | |
| R57 | " -124YN | " | |
| R58 | " -124YN | " | |
| R59 | " -222YN | " | |
| R60 | " -222YN | " | |
| R61 | — | — | |
| R62 | QRS188J-124YN | Chip R | |
| R63 | " -103YN | " | |
| R64 | " -272YN | " | |
| R65 | " -124YN | " | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R66 | QRS188J-124YN | Chip R | |
| R67 | " -272YN | " | |
| R68 | " -103YN | " | |
| R69 | " -124YN | " | |
| R70 | " -122YN | " | |
| R71 | " -223YN | " | |
| R72 | " -332YN | " | |
| R73 | " -124YN | " | |
| R74 | " -392YN | " | |
| R75 | " -392YN | " | |
| R76 | QVZ3531-472 | VR | CH-2 LEVEL ADJ. |
| R77 | " -472 | " | CH-1 LEVEL ADJ. |
| R78 | — | — | |
| R79 | — | — | |
| R80 | — | — | |
| R81 | — | — | |
| R82 | QRS188J-124YN | Chip R | |
| R83 | " -124YN | " | |
| R84 | " -392YN | " | |
| R85 | " -392YN | " | |
| R86 | " -124YN | " | |
| R87 | " -124YN | " | |
| R88 | " -392YN | " | |
| R89 | " -392YN | " | |
| R90 | — | — | |
| R91 | QRS188J-102Y | Chip R | |
| R92 | — | — | |
| R93 | QRS188J-102Y | Chip R | |
| R94 | " -122YN | " | |
| R95 | " -223YN | " | |
| R96 | " -332YN | " | |
| R97 | " -124YN | " | |
| R98 | " -222YN | " | |
| R99 | " -562YN | " | |
| R100 | " -104YN | " | |
| R101 | " -104YN | " | |
| R102 | " -223YN | " | |
| R103 | " -562YN | " | |
| R104 | " -562YN | " | |
| R105 | " -822YN | " | |
| R106 | " -562YN | " | |
| R107 | " -562YN | " | |
| R108 | QVZ3531-472 | VR | CH-1 REC DEV. |
| R109 | QRS188J-220YN | Chip R | |
| R110 | QRD182J-225 | CR | |
| R111 | QRS188J-333YN | Chip R | |
| R112 | " -183YN | " | |
| R113 | " -562YN | " | |
| R114 | QVZ3531-222 | VR | CARR. ADJ. |
| R115 | QRD182J-392 | CR | |
| R116 | QRS188J-102YN | Chip R | |
| R117 | QVZ3531-102 | VR | 1.3M REC LEVEL |
| R118 | — | — | |
| R119 | — | — | |
| R120 | QRS188J-123YN | Chip R | |
| R121 | " -102YN | " | |
| R122 | " -102YN | " | |
| R123 | " -123YN | " | |
| R124 | " -0R0Y | " | |
| R125 | " -222YN | " | |
| R126 | QVZ3531-103 | VR | CH-1 PB LEVEL |
| R127 | QRS188J-102YN | Chip R | |
| R128 | " -102YN | " | |
| R129 | — | — | |
| R130 | QRS188J-222YN | Chip R | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R131 | QRS188J-562YN | Chip R | |
| R132 | " -104YN | " | |
| R133 | " -223YN | " | |
| R134 | " -562YN | " | |
| R135 | " -104YN | " | |
| R136 | " -822YN | " | |
| R137 | QVZ3531-472 | VR | CH-2 REC DEV. |
| R138 | QRS188J-220YN | Chip R | |
| R139 | QRD182J-225 | CR | |
| R140 | QRS188J-333YN | Chip R | |
| R141 | " -183YN | " | |
| R142 | " -562YN | " | |
| R143 | QVZ3531-222 | VR | CH-2 CARR. ADJ. |
| R144 | QRD182J-222 | CR | |
| R145 | QRS188J-102YN | Chip R | |
| R146 | QVZ3531-102 | VR | 1.7M REC LEVEL |
| R147 | — | — | |
| R148 | — | — | |
| R149 | QRS188J-272YN | Chip R | |
| R150 | " -102YN | " | |
| R151 | " -102YN | " | |
| R152 | " -0R0Y | " | |
| R153 | " -222YN | " | |
| R154 | QVZ3531-103 | VR | CH-2 PB LEVEL |
| R155 | QRS188J-102YN | Chip R | |
| R156 | " -104YN | " | |
| R157 | " -103YN | " | |
| R158 | " -472YN | " | |
| R159 | " -102YN | " | |
| R160 | " -104YN | " | |
| R161 | " -103YN | " | |
| R162 | " -472YN | " | |
| R163 | — | — | |
| R164 | — | — | |
| R165 | — | — | |
| R166 | — | — | |
| R167 | — | — | |
| R168 | — | — | |
| R169 | — | — | |
| R170 | — | — | |
| R171 | QRS188J-223YN | Chip R | |
| R172 | QVZ3531-154 | VR | CH-2 SW |
| R173 | QRS188J-561YN | Chip R | |
| R174 | " -183YN | " | |
| R175 | QVZ3531-154 | VR | CH-1 SW |
| R176 | QRS188J-183YN | Chip R | |
| R177 | " -682YN | " | |
| R178 | QRD161J-122 | CR | |
| R179 | QRS188J-681YN | Chip R | |
| R180 | " -682YN | " | |
| R181 | " -272YN | " | |
| R182 | " -153YN | " | |
| R183 | " -272YN | " | |
| R184 | " -153YN | " | |
| R185 | " -103YN | " | |
| R186 | " -103YN | " | |
| R187 | " -223YN | " | |
| R188 | " -472YN | " | |
| R189 | " -222YN | " | |
| R190 | " -391YN | " | |
| R191 | " -272YN | " | |
| R192 | " -472YN | " | |
| R193 | " -272YN | " | |
| R194 | " -332YN | " | |
| R195 | " -103YN | " | |

**[FM Audio]**

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| R196 | QRS188J-472YN | Chip R | |
| R197 | QRD161J-220 | CR | |
| R198 | — | — | |
| R199 | QRS188J-332YN | Chip R | |
| R200 | ″ -103YN | ″ | |
| R201 | ″ -151YN | ″ | |
| R202 | ″ -331YN | ″ | |
| R203 | ″ -182YN | ″ | |
| R204 | ″ -124YN | ″ | |
| R205 | ″ -682YN | ″ | |
| R206 | ″ -124YN | ″ | |
| R207 | ″ -183YN | ″ | |
| R208 | ″ -183YN | ″ | |
| R209 | ″ -124YN | ″ | |
| R210 | ″ -221YN | ″ | |
| R211 | ″ -682YN | ″ | |
| R212 | ″ -124YN | ″ | |
| R213 | — | — | |
| R214 | QRS188J-822YN | Chip R | |
| R215 | ″ -822YN | ″ | |
| R216 | — | — | |
| R217 | QRS188J-123YN | Chip R | |
| R218 | ″ -123YN | ″ | |
| R219 | ″ -104YN | ″ | |
| R220 | — | — | |
| R221 | — | — | |
| R222 | QRS188J-123YN | Chip R | |
| R223 | ″ -104YN | ″ | |
| R224 | ″ -104YN | ″ | |
| R225 | ″ -103YN | ″ | |
| R226 | ″ -152YN | ″ | |
| R227 | ″ -102YN | ″ | |
| R228 | ″ -102YN | ″ | |
| R229 | ″ -222YN | ″ | |
| R230 | ″ -102YN | ″ | |
| R231 | ″ -102YN | ″ | |
| R232 | ″ -103YN | ″ | |
| R233 | ″ -103YN | ″ | |
| R234 | ″ -821YN | ″ | |
| R235 | ″ -821YN | ″ | |
| R236 | ″ -103YN | ″ | |
| R237 | ″ -103YN | ″ | |
| R238 | ″ -0R0Y | ″ | |
| R239 | — | — | |
| R240 | QRS188J-122YN | Chip R | |
| R241 | — | — | |
| R242 | — | — | |
| R243 | QRS188J-222YN | Chip R | |
| R244 | ″ -222YN | ″ | |
| R245 | — | — | |
| R246 | QRS188J-103YN | Chip R | |
| R247 | ″ -105YN | ″ | |
| R248 | ″ -102YN | ″ | |
| R249 | ″ -0R0Y | ″ | |
| R250 | ″ -0R0Y | ″ | |
| R251 | — | — | |
| R252 | QRD161J-221 | CR | |
| | | | |
| B21 | QRS188J-0R0Y | Chip R | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C 1 | QCT81CH-470ZL | Chip Cap | |
| C 2 | QEPA1HM-105 | NP Cap | |
| C 3 | QCY81EK-223ZL | Chip Cap | |
| C 4 | ″ -223ZL | ″ | |
| C 5 | ″ -223ZL | ″ | |
| C 6 | ″ -223ZL | ″ | |
| C 7 | ″ -223ZL | ″ | |
| C 8 | QCT81CH-181ZL | ″ | |
| C 9 | ″ -181ZL | ″ | |
| C10 | QCS81HJ-102ZL | ″ | |
| C11 | QER41HM-105 | E Cap | |
| C12 | QCS81HJ-102ZL | Chip Cap | |
| C13 | QER41HM-105 | E Cap | |
| C14 | QCY81EK-223ZL | Chip Cap | |
| C15 | QER40JM-336 | E Cap | |
| C16 | QCY81EK-223ZL | Chip Cap | |
| C17 | QCT81CH-331ZL | ″ | |
| C18 | QER41HM-224 | E Cap | |
| C19 | QER40JM-336 | ″ | |
| C20 | QCY81EK-223ZL | Chip Cap | |
| C21 | QER40JM-336 | E Cap | |
| C22 | QCY81EK-223ZL | Chip Cap | |
| C23 | ″ -223ZL | ″ | |
| C24 | ″ -223ZL | ″ | |
| C25 | QCT81CH-270ZL | ″ | |
| C26 | QER41HM-105 | E Cap | |
| C27 | QCY81EK-223ZL | Chip Cap | |
| C28 | ″ -223ZL | ″ | |
| C29 | QER41CM-226 | E Cap | |
| C30 | QCS81HJ-102ZL | Chip Cap | |
| C31 | QER41EM-475 | E Cap | |
| C32 | ″ -475 | ″ | |
| C33 | ″ -475 | ″ | |
| C34 | ″ -475 | ″ | |
| C35 | ″ -475 | ″ | |
| C36 | ″ -475 | ″ | |
| C37 | ″ -475 | ″ | |
| C38 | ″ -475 | ″ | |
| C39 | ″ -475 | ″ | |
| C40 | ″ -475 | ″ | |
| C41 | ″ -475 | ″ | |
| C42 | ″ -475 | ″ | |
| C43 | ″ -475 | ″ | |
| C44 | — | — | |
| C45 | QER41EM-475 | E Cap | |
| C46 | — | — | |
| C47 | QER41EM-475 | E Cap | |
| C48 | ″ -475 | ″ | |
| C49 | QER40JM-226 | ″ | |
| C50 | ″ -226 | ″ | |
| C51 | QER41CM-476 | ″ | |
| C52 | QER41HM-105 | ″ | |
| C53 | QCY81HK-562ZL | Chip Cap | |
| C54 | QEPA1EM-475 | NP Cap | |
| C55 | QER41HM-105 | E Cap | |
| C56 | QCY81HK-562ZL | Chip Cap | |
| C57 | QEPA1EM-475 | NP Cap | |
| C58 | QER41HM-105 | E Cap | |
| C59 | QER41EM-475 | ″ | |
| C60 | ″ -475 | ″ | |
| C61 | QER41HM-105 | ″ | |
| C62 | QER41CM-476 | ″ | |
| C63 | QER40JM-226 | ″ | |
| C64 | ″ -476 | ″ | |
| C65 | ″ -476 | ″ | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C66 | QER40JM-226 | E Cap | |
| C67 | — | — | |
| C68 | — | — | |
| C69 | — | — | |
| C70 | — | — | |
| C71 | QER41EM-475 | E Cap | |
| C72 | " -475 | " | |
| C73 | QER40JM-107 | " | |
| C74 | QER41EM-475 | " | |
| C75 | QER40JM-107 | " | |
| C76 | QER41EM-475 | " | |
| C77 | QER41CM-336 | " | |
| C78 | PU54820G-822 | PP Cap | |
| C79 | QER41CM-106 | E Cap | |
| C80 | " -106 | " | |
| C81 | " -106 | " | |
| C82 | " -106 | " | |
| C83 | " -106 | " | |
| C84 | " -106 | " | |
| C85 | QER40JM-107 | " | |
| C86 | QER41EM-475 | " | |
| C87 | QEPA1EM-475 | NP Cap | |
| C88 | QCT81CH-101ZL | Chip Cap | |
| C89 | QCS81HJ-102ZL | " | |
| C90 | QCY81EK-223ZL | " | |
| C91 | QCT81CH-820ZL | " | |
| C92 | QCY81EK-223ZL | " | |
| C93 | QCT81CH-101ZL | " | |
| C94 | — | — | |
| C95 | QCY81EK-223ZL | Chip Cap | |
| C96 | QEPA1EM-475 | NP Cap | |
| C97 | QER40JM-476 | E Cap | |
| C98 | QER41CM-106 | " | |
| C99 | PU54820G-822 | PP Cap | |
| C100 | QCY81HK-562ZL | Chip Cap | |
| C101 | QER41CM-106 | E Cap | |
| C102 | QER40JM-476 | " | |
| C103 | QCT81CH-101ZL | Chip Cap | |
| C104 | QCF81EP-334ZL | " | |
| C105 | QER40JM-336 | E Cap | |
| C106 | QCS81HJ-332ZL | Chip Cap | |
| C107 | — | — | |
| C108 | QER40JM-476 | E Cap | |
| C109 | PU54820G-822 | PP Cap | |
| C110 | QER41CM-106 | E Cap | |
| C111 | " -106 | " | |
| C112 | " -106 | " | |
| C113 | QEPA1EM-475 | NP Cap | |
| C114 | QER41CM-106 | E Cap | |
| C115 | QER40JM-107 | " | |
| C116 | QER41EM-475 | " | |
| C117 | QEPA1EM-475 | NP Cap | |
| C118 | QCT81CH-101ZL | Chip Cap | |
| C119 | QCS81HJ-102ZL | " | |
| C120 | QCY81EK-223ZL | " | |
| C121 | QCT81CH-820ZL | " | |
| C122 | QCY81EK-223ZL | " | |
| C123 | QCS81HJ-102ZL | " | |
| C124 | QCT81CH-101ZL | " | |
| C125 | — | — | |
| C126 | QCY81EK-223ZL | Chip Cap | |
| C127 | QER40JM-476 | E Cap | |
| C128 | QER41CM-106 | " | |
| C129 | PU54820G-822 | PP Cap | |
| C130 | QCY81HK-562ZL | Chip Cap | |

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| C131 | QER41CM-106 | E Cap | |
| C132 | QER40JM-476 | " | |
| C133 | QCS81HJ-332ZL | Chip Cap | |
| C134 | QCT81CH-101ZL | " | |
| C135 | QCF81EP-334ZL | " | |
| C136 | QER40JM-336 | E Cap | |
| C137 | " -476 | " | |
| C138 | — | — | |
| C139 | QFZ9011-104 | MY Cap | |
| C140 | QER41CM-226 | E Cap | |
| C141 | QFZ9011-104 | MY Cap | |
| C142 | QCS81HJ-102ZL | Chip Cap | |
| C143 | " -102ZL | " | |
| C144 | QER41CM-476 | E Cap | |
| C145 | " -106 | " | |
| C146 | " -106 | " | |
| C147 | QCT81CH-820ZL | Chip Cap | |
| C148 | QCY81EK-223ZL | " | |
| C149 | QER41CM-106 | E Cap | |
| C150 | " -106 | " | |
| C151 | " -106 | " | |
| C152 | " -106 | " | |
| C153 | " -476 | " | |
| C154 | " -476 | " | |
| C155 | QER40JM-336 | " | |
| C156 | " -336 | " | |
| C157 | QER41CM-226 | " | |
| C158 | QER40JM-336 | " | |
| C159 | " -336 | " | |
| C160 | QCT81CH-101ZL | Chip Cap | |
| C161 | " -101ZL | " | |
| C162 | QER41CM-106 | E Cap | |
| C163 | " -106 | " | |
| C164 | QCY81HK-103ZL | Chip Cap | |
| C165 | " -103ZL | " | |
| C166 | " -103ZL | " | |
| C167 | QER41EM-475 | E Cap | |
| C168 | " -475 | " | |
| C169 | — | — | |
| C170 | QCY81EK-223ZL | Chip Cap | |
| C171 | QER41CM-476 | E Cap | |
| C172 | QCY81HK-103ZL | Chip Cap | |
| C173 | " -103ZL | " | |
| C174 | QCS81HJ-152ZL | " | |
| C175 | QFN41HJ-102 | MY Cap | |
| C176 | " -102 | " | |
| C177 | QCY81EK-223ZL | Chip Cap | |
| C178 | " -223ZL | " | |
| C179 | — | — | |
| C180 | — | — | |
| C181 | QER41CM-476 | E Cap | |
| C182 | QCY81EK-223ZL | Chip Cap | |
| ⚠L 1 | PU53223-101J | Peaking Coil | |
| L 2 | " -221J | " | |
| L 3 | " -101J | " | |
| L 4 | " -101J | " | |
| ⚠L 5 | " -101J | " | |
| L 6 | " -101J | " | |
| L 7 | — | — | |
| L 8 | PU53607-152 | Coil | |
| L 9 | PU53223-101J | Peaking Coil | |
| L10 | — | — | |
| L11 | PU53607-152 | Coil | |

### [FM Audio]

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| T 1 | PU56175 | S. Trans. | |
| T 2 | " | " | |
| T 3 | PU56176 | L.P.F. | |
| T 4 | " | " | |
| T 5 | PU56177 | B.P.F. | |
| T 6 | PU56177-2 | " | |
| ⚠ CP 1 | ICP-F10 | IC Protector | |
| ⚠ CP 2 | " | " | |
| ⚠ CP 3 | " | " | |
| | PU56008 | Test Pin | TP1-4<br>TP9-12 |
| CN 1 | PU49215-106 | Cap. Housing | |
| CN 2 | " -104 | " | |
| CN 3 | " -105 | " | |
| CN 4 | – | – | |
| CN 5 | PU49215-102 | Cap. Housing | |
| CN 6 | " -104 | " | |
| CN 7 | " -4 | " | |
| CN 8 | " -105 | " | |
| CN 9 | " -106 | " | |
| CN10 | – | – | |
| CN11 | PU49215-6 | Cap. Housing | |
| CN12 | " -103 | " | |
| CN13 | " -104 | " | |
| CN14 | " -4 | " | |
| CN15 | " -4 | " | |
| CN16 | – | – | |
| CN17 | PU49215-103 | Cap. Housing | |
| CN18 | " -102 | " | |
| CN19 | " -104 | " | |
| CN20 | – | – | |
| CN21 | PU49215-102 | Cap. Housing | |
| | PQ40406 | P.W.B. Holder | x 2 |
| | DPSP3006Z | Screw | x 2 |
| | PU34743 | Shield Case (A) | |
| | PU34744-1-1 | Shield Cover | |

**Note:** "x 2" indicate two pieces respectively.

### 6.2.16 Timing Circuit Board Ass'y $\boxed{3}$ $\boxed{2}$ . . PU58114B

| Symbol No. | Part No. | Part Name | Description |
|---|---|---|---|
| Q 1 | 2SA937R | Transistor | |
| Q 2 | 2SC2021R | " | |
| Q 3 | " | " | |
| D 1 | MA150 | Diode | |
| D 2 | " | " | |
| D 3 | " | " | |
| D 4 | " | " | |
| D 5 | " | " | |
| R 1 | QRD162J-333 | CR | |
| R 2 | " -563 | " | |
| R 3 | " -182 | " | |
| R 4 | " -102 | " | |
| R 5 | " -823 | " | |
| R 6 | " -563 | " | |
| R 7 | " -333 | " | |
| R 8 | " -563 | " | |
| C 1 | QET61AM-336 | E Cap | |
| CN 1 | PU49215-7 | Cap. Housing | |
| | PU56838 | PWB Bracket | |
| | DPSP3006Z | Screw | x 2 |